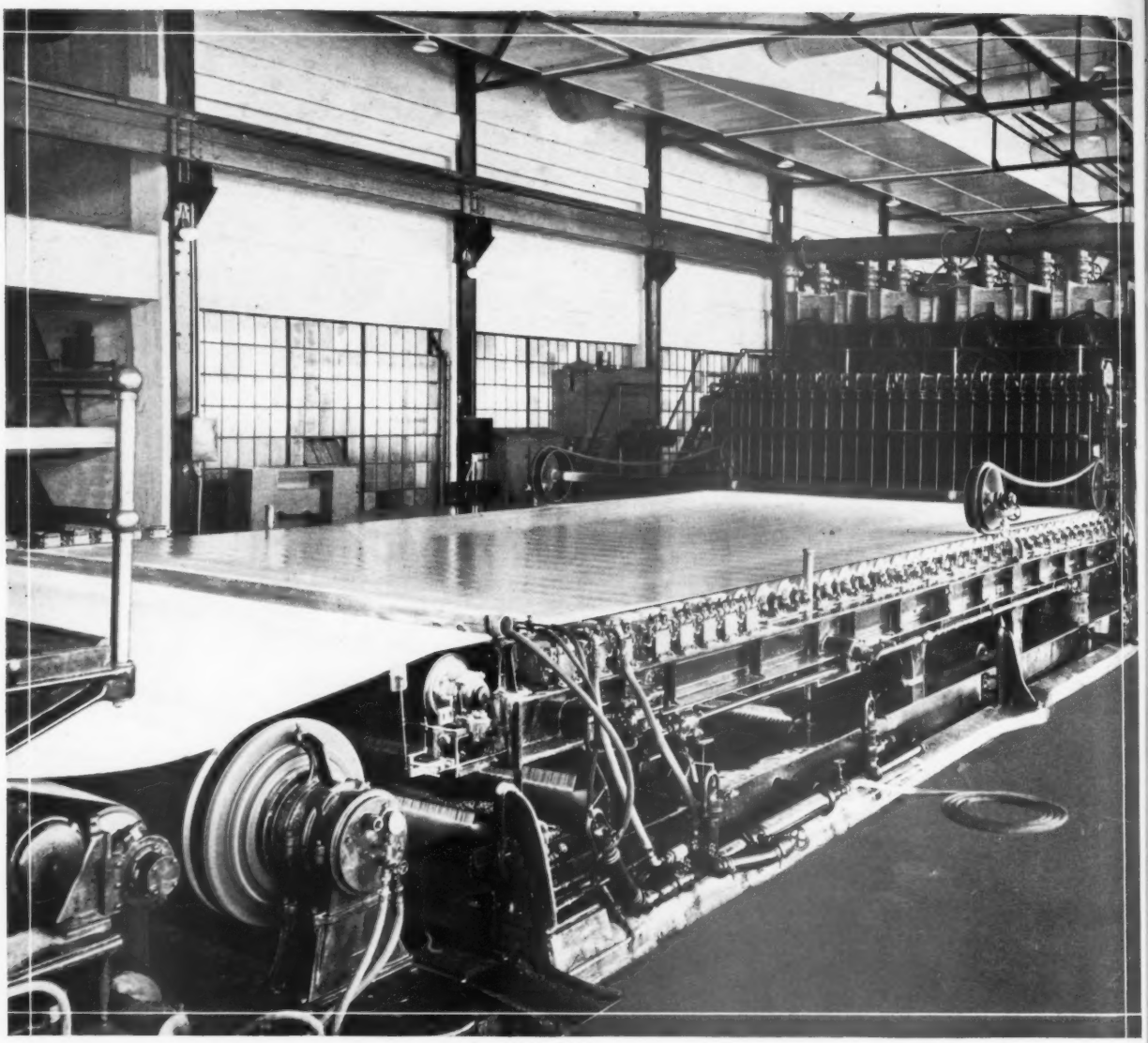
Review Number

JANUARY 1928

PACIFIC PULP and PAPER INDUSTRY



THIS is a photograph of the new modern 234-inch newsprint Beloit Removable Fourdrinier installed early in 1927 in the new unit of the Washington Pulp & Paper Corporation's mill at Port Angeles, Washington. Another 234-inch Fourdrinier is now being installed in the new mill of the Hawley Pulp & Paper Company at Oregon City, Oregon. Both machines incorporate all the newest and most modern time, labor, power and money-saving features. They are built to produce newsprint at speeds up to 1200 feet per minute.

BELOIT IRON WORKS, BELOIT, WIS., U. S. A.

Removable

BELOIT IRON WORKS PAPER MACHY BELOIT, WIS.

Pacific Pulp & Paper Industry is published monthly February to December, and semi-monthly in January, at 71 Columbia St., Seattle, Wash. Subscription: U. S. and Canada, $4.00; other countries, $5.00. Entered as second class matter May 20, 1927, at the Postoffice at Seattle, under the Act of March 3, 1879. Vol. 2, No. 2, Review Number, January, 1928, Copyright, 1928, by Miller Freeman.

Pacific Coast chooses BELOIT Removables

Four additional papermaking machines were ordered for the Pacific Coast in 1927 by these representative mills:

WASHINGTON PULP & PAPER CORP.
234-Inch Fourdrinier

HAWLEY PULP & PAPER CO.
234-Inch Fourdrinier

TUMWATER PAPER COMPANY
134-Inch Fourdrinier

LONGVIEW FIBRE COMPANY
176-Inch Fourdrinier

Other Pacific Coast mills using "Beloit" equipment are:

St. Helens Pulp & Paper Co.
Crown Willamette Paper Co.
National Paper Products Co.
Paraffine Companies, Inc.

Beloit equipment was selected because the Pacific Coast has for years known through actual experience from machines already operating here, that it is quite the most modern and economical equipment in the paper-making field.

Beloit engineers are ever ready to discuss your knottiest problems with you, intelligently and understandingly, from an experience dating back to pioneer days.

5 Advantages

of Beloit Removable Fourdrinier and Aldrich High-Speed Shake.

First

A high-speed shake that absolutely can be depended upon to perform reliably.

Second

A high-speed shake applicable to higher speeds and wider machines.

Third

The famous Removable Fourdrinier to go with such a shake.

Fourth

A convenient, easy means of applying the shake where it is needed.

Fifth

A high-speed shake that is adjustable both as to speed, throw and pitch of wire while machine is running.

BELOIT IRON WORKS, BELOIT, WIS., U. S. A.

Removable

BELOIT IRON WORKS PAPER MACHY BELOIT WIS

STRUCTURAL STEEL

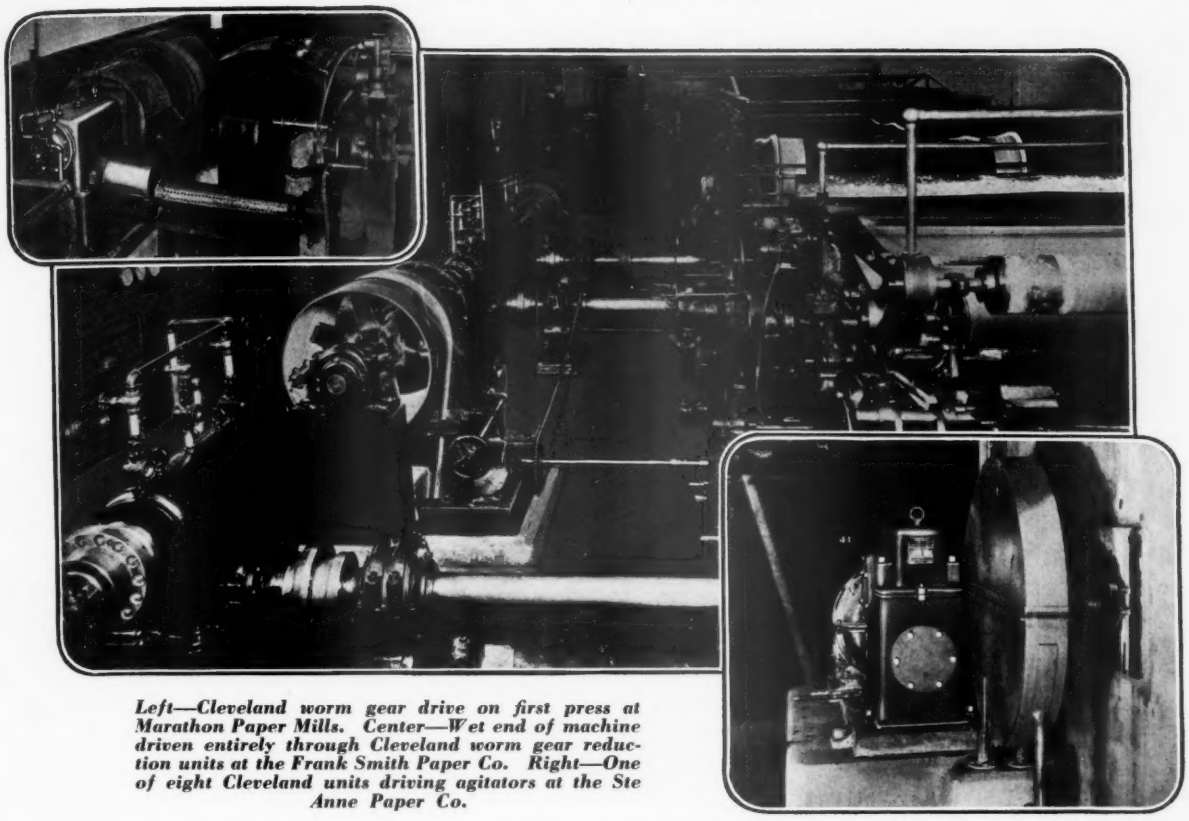
Specializing in structural steel design and fabrication of all sizes bridges, pulp and paper mills, industrial mill buildings of all kinds, office buildings, towers, conveyor systems and steel hull barges.

Airplane view showing 13-acre site of the Wallace Bridge & Structural Steel Co., the largest fabricating plant in the Pacific Northwest. Capacity 25,000 tons annually.

The Wallace Bridge & Constructural Steel Company is actively engaged in structural steel fabrication of pulp and paper mills in the Pacific Northwest. We are in a position to make immediate delivery from our 3,000-ton structural steel stock upon short notice. Our trained engineers and draftsmen are ready to assist in solving all structural steel problems.

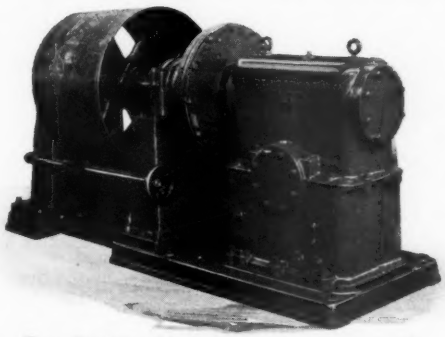
Wallace Bridge & Structural Steel Co.

SEATTLE, WASHINGTON



Left—Cleveland worm gear drive on first press at Marathon Paper Mills. Center—Wet end of machine driven entirely through Cleveland worm gear reduction units at the Frank Smith Paper Co. Right—One of eight Cleveland units driving agitators at the Ste Anne Paper Co.

Accepted Drives for Paper Machinery



For driving the sections of paper and board machines the Cleveland worm gear unit has proven very successful. A total of thirty-seven machines are now fitted with Cleveland worm gear section drives. A complete drive with reduction unit magnetic clutch, pulley and belt shifter, is shown above. Ask your machine builder about Cleveland gearing for section drives.

Cleveland worm gear drives are now operating various kinds of pulp and paper machinery in over one hundred American and Canadian mills. Most of these drives have been running for a period of years and all are making exceptional records for low maintenance costs and continuous operation.

The standard Cleveland worm gear reduction unit is remarkably adapted for paper mill service. The power is transmitted smoothly and efficiently; the drive is quiet, clean and compact; inherently sturdy design gives assurance of long life without breakdowns or repairs. From the wood room to the calenders, Cleveland drives are effecting real economies in power transmission.

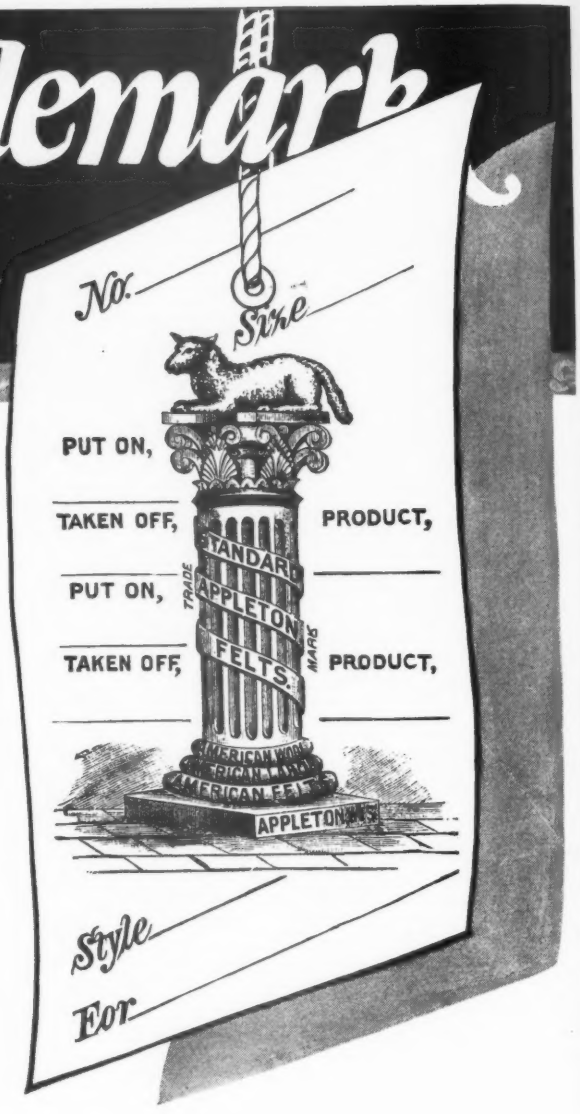
Detailed information about the standardized Cleveland Worm Gear Reduction Units will be sent promptly on request. Ask for Bulletin 106.

— CANADIAN REPRESENTATIVES —
PEACOCK BROS., LTD., 1605 DELORIMIER AVE , MONTREAL, P. Q.

CLEVELAND
WORM & GEAR COMPANY

3257 EAST 80th STREET CLEVELAND, OHIO

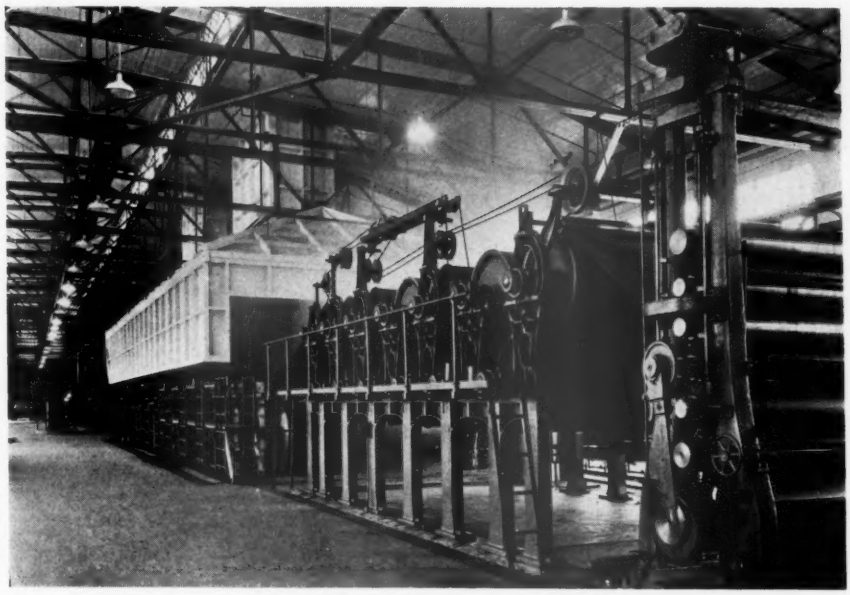
This Trademark on Felts



FOR 37 years this trade mark on Felts and Jackets has stamped them for *quality* and *service* — two important reasons for the wide acceptance of Appleton Felts and Jackets by the leading paper mills throughout the country. Let us use this experience to help you solve your felt problems.

Appleton Woolen Mills
APPLETON, WISCONSIN
WALTER S. HODGES, West Coast Representative
408 12th St., Portland, Oregon

Appleton
Felts and Jackets



In One Year—Two Vertical Dryer Installations on the Pacific Coast

OUT on the Pacific Coast where paper and pulp making is one of the newer industries, and entire mills are being equipped at one time, it is significant that many of them are using Vertical Dryers.

The above photograph is that of the finishing end of the Vertical Dryer Section in the Longview Fibre Company's new mill. In this particular installation the wet sheet goes from the press part to a Vertical Dryer Section located in the basement and finishes on the double deck section in the foreground. You will notice that these double deck dryers are located above the floor to eliminate a pit. Notice, too, that all the dryers, of which there are 101, are equipped with Sheahan Carriers.

This is the second Vertical Dryer installation to start on the Pacific Coast during 1927. In addition, two more, now being erected on our floor, will be shipped early in this year.

More and more, mills are finding that it is only in Vertical Dryers that they get the efficient drying, the improved appearance of the sheet, the low cost of operation, and the saving in steam and overhead that aggressive modern competition demands.

You should hear the whole story. Why not let us tell it to you?

The Black-Clawson Company

HAMILTON, OHIO

Established 1873

Export Offices: 15 Park Row, New York City

Builders of Highest Quality Pulp and Paper Mill Machinery
Patentees and Sole Builders of Vertical Dryers and Champion Fourdriniers

BLACK-CLAWSON

VERTICAL DRYERS

Built with Machine-Tool Accuracy

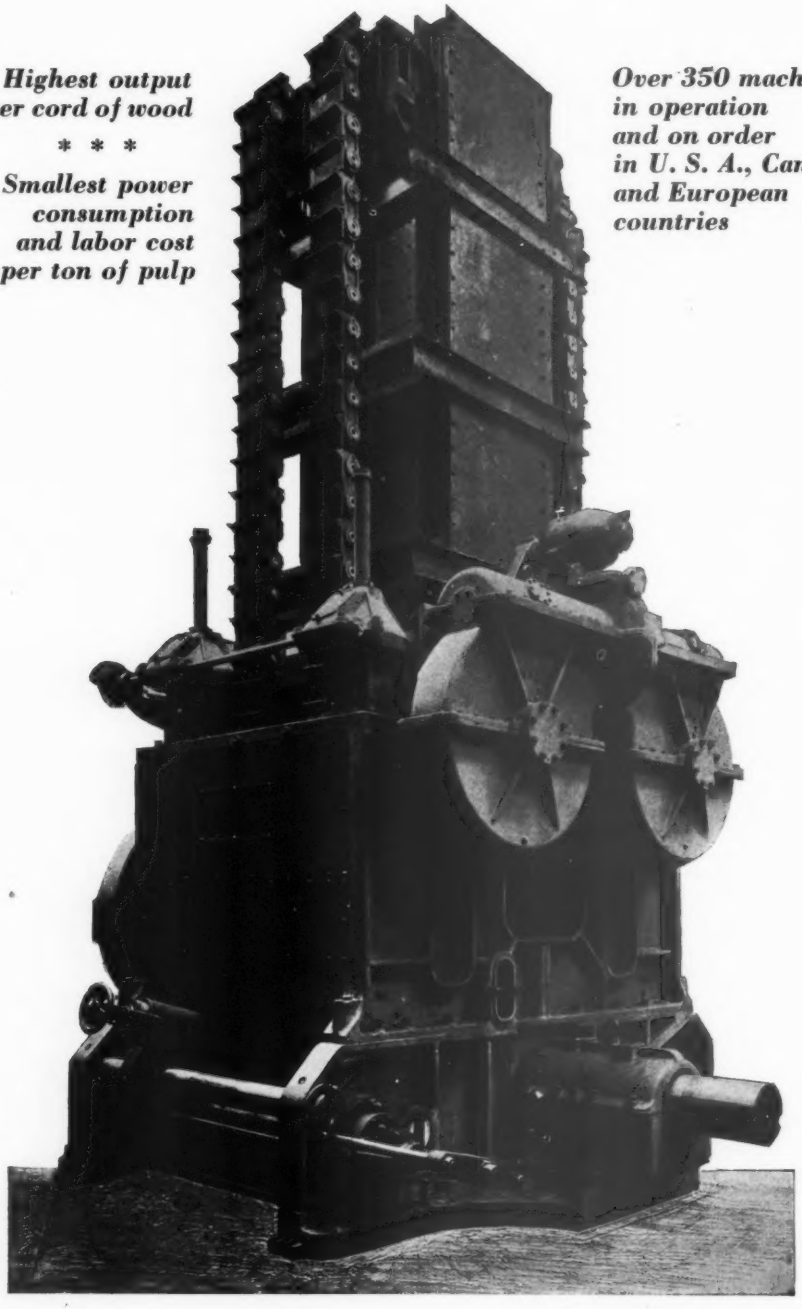
When writing to BLACK-CLAWSON CO. *please mention* PACIFIC PULP & PAPER INDUSTRY

The VOITH-WARREN GRINDER

Highest output per cord of wood

* * *

Smallest power consumption and labor cost per ton of pulp



Over 350 machines in operation and on order in U. S. A., Canada and European countries

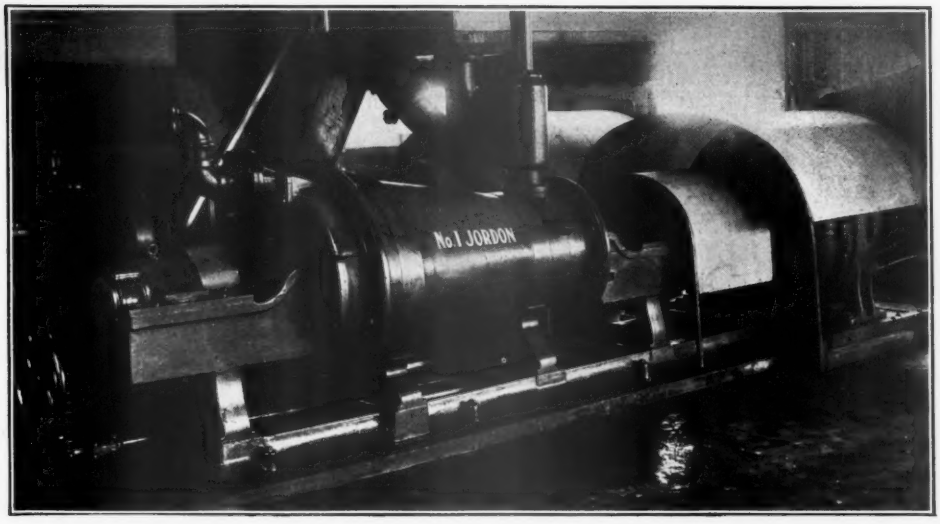
AMERICAN VOITH CONTACT COMPANY, Inc.

280 Madison Ave. **New York City**

Nothing is apt to cost so much as a bearing that cost so little

One of the 36 paper machinery manufacturers that uses SKF bearings as standard equipment

THE APPLETON MACHINE CO.



$948.58 Saved Annually Plus Uniform Product Prove SKF Valuable Investment on Jordan

TO secure uniform stock refinement the utmost efficiency of the Jordan engine is necessary. That SKF Ball Bearings go a long way to insure such ideal performance is proven in the brief summary covering the operation over an eighteen-months' period of two similar Jordans, one SKF-equipped and the other with babbitted bearings.

Comparative study shows that with the SKF-equipped Jordan lubrication and inspection are simpler, filling renewal less costly, no cooling water needed and power consumption decreased 17.1 percent. These advantages showed a saving of $948.58 annually. To this must be added the intangible advantages which are—absence of vibration, wide range of adjustment and uniform quality of output. The whole story can be secured by writing for your copy of certified survey No. 1955.

You men who plan, build, use or pay for machines of any kind, remember this: It costs more to replace a poor bearing than to buy the best one that SKF ever produced.

SKF Industries of California, Inc.

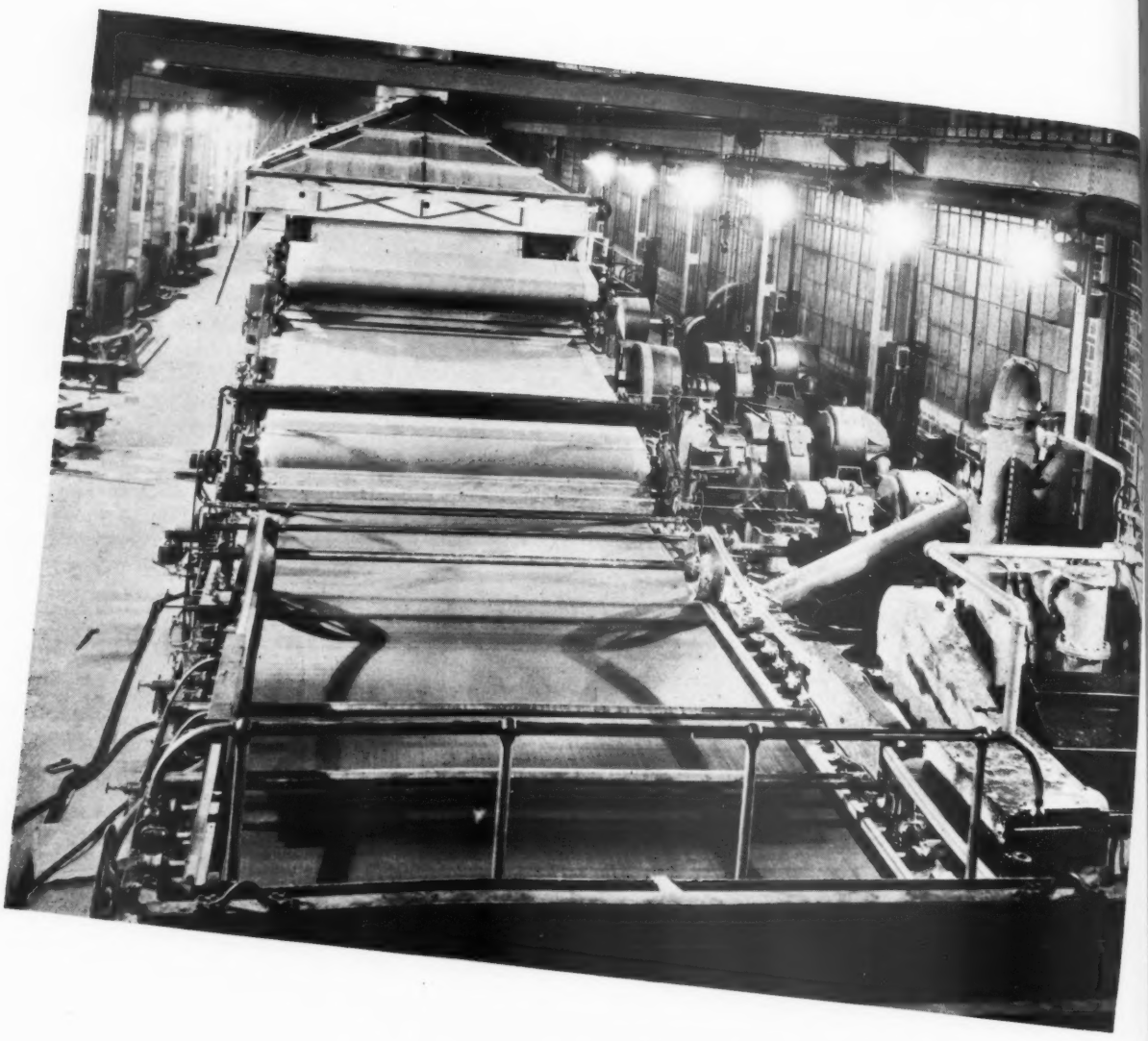
115 New Montgomery St. San Francisco | 480 Burnside St. Portland, Oregon | 1114 South Hope St. Los Angeles

1955

SKF

Ball Bearings SKF Puts the Right Bearing in the Right Place **Roller Bearings**

When writing to S. K. F. INDUSTRIES, INC., *please mention* PACIFIC PULP AND PAPER INDUSTRY



The 136-inch Bagley & Sewall paper machine recently installed in the new unit of the Columbia River Paper Mills, Vancouver, Washington. The photograph was taken from the wet end of the machine and shows the couch and first and second press drives and belt drive to baby press.

The BAGLEY and SEWALL CO.

WATERTOWN — NEW YORK

1823 — 1927

New—

BAGLEY and SEWALL Machine

In the Recently Completed Unit of

The COLUMBIA RIVER PAPER MILLS

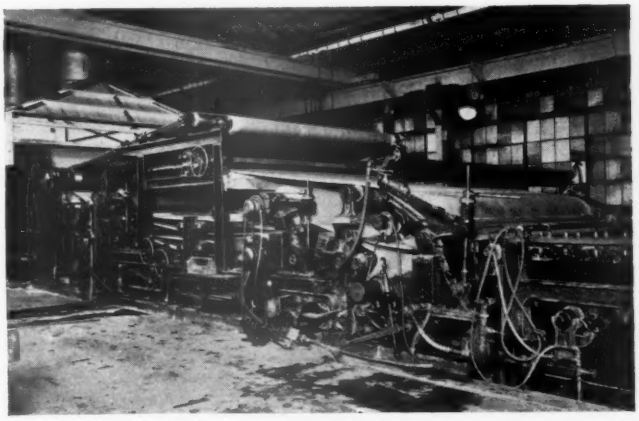
VANCOUVER, WASHINGTON

EVIDENCE of the excellence of construction and design of Bagley & Sewall paper machines is shown by an item in the November number of PACIFIC PULP and PAPER INDUSTRY which reads:

> "For a brand new paper machine to turn out marketable paper within 15 minutes after the current was turned on is something out of the ordinary. Yet such is the record of the Bagley & Sewall 136-inch Fourdrinier, when it was put into operation at the Columbia River Paper Mills, Vancouver, Washington.
>
> "As this is written the machine, which was installed and running just seven months after the order had been placed, was turning out sulphite wrapping at the rate of 600 feet a minute. The first shipment of the unit reached Vancouver May 16, the remainder June 20."

Since the building of the Columbia River Paper Mills in 1923 and the installation of the first Bagley & Sewall machine, this plant has become one of the most successful on the Pacific Coast.

It is significant of the satisfactory performance of this first Bagley & Sewall machine that when expansion became necessary and a second machine was ordered, it was a duplicate of the No. 1 machine.



Another view of the same machine showing couch and first and second presses equipped with common top felt.

— Bulletins on Request —

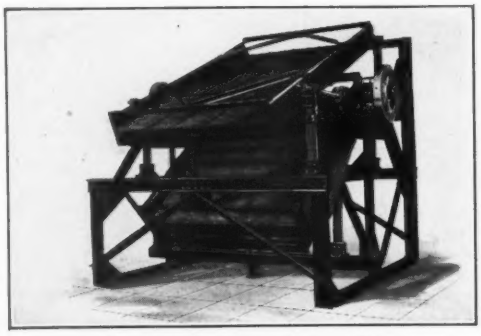
The BAGLEY and SEWALL CO.

WATERTOWN — NEW YORK

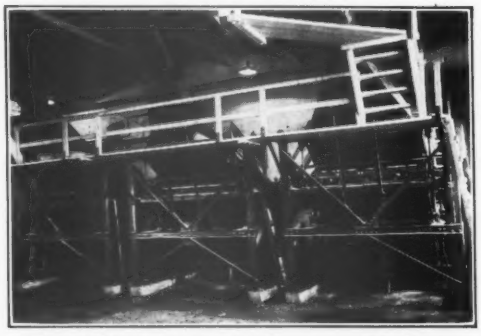
1823 — 1927

RYTHER AND PRINGLE COMPANY CARTHAGE N.Y.

RYTHER CHIP SCREEN

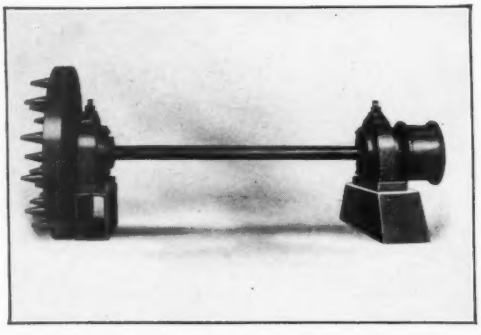


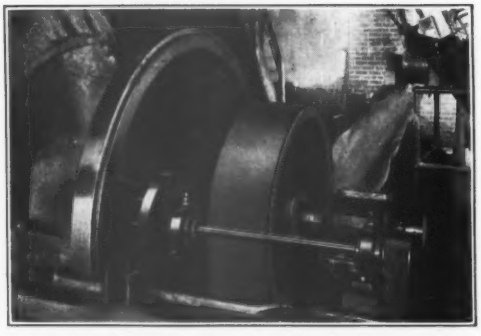
All steel construction
Floor space 10 feet square, high capacity, 2 H. P. per unit.



Showing rear view of three Ryther Chip Screens operating in multiple, 25 cords per hour.

WOOD CHIP BREAKER

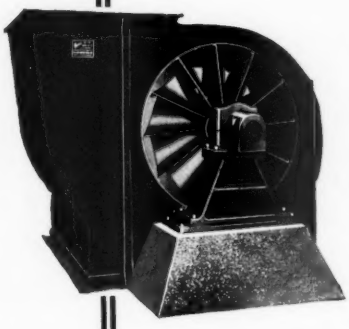


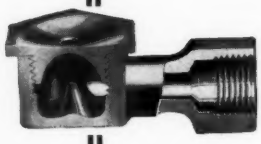


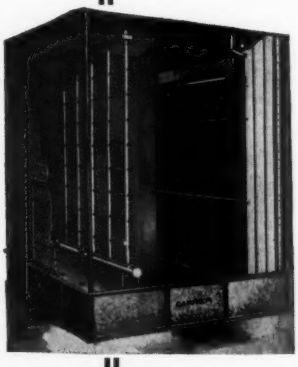
Chips treated by the Wood Ideal Chip Breaker installed under the chipper hood are uniform in size, thoroughly separated, dusted free and clean, ready for screening.

FOR CANADA REFER
CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

Selling Experience with Equipment –







FROM power plant to packing room, there is Buffalo Equipment specially suited to paper mill requirements. Fifty years' experience in designing and building mechanical draft, heating and ventilating and special air handling apparatus has given us the ability to sell not only equipment — but GUARANTEED SATISFACTION.

Mechanical Draft Apparatus — Buffalo Forced and Induced Draft cinder eliminating fans, air preheaters and powdered fuel equipment is in operation in many of the largest power plants in America.

General Mill Ventilating: Let us show you what we have accomplished in the branch of paper mill work.

Heat Recovery Systems — Guaranteed savings with the Buffalo System. Estimates on request.

Dryjector Systems—Increased production, greater uniformity, more rapid drying and longer Felt life are some of the advantages of Buffalo Dryjector Systems.

Pumps—For every purpose made by our associates—Buffalo Steam Pump Co.

Buffalo Forge Company

215 Mortimer St., BUFFALO, N.Y.

In Canada
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

PACIFIC COAST OFFICES:
Seattle—303 Alaska Building.
San Francisco—1006 Flatiron Building.
Los Angeles—1824 South Hope Street.

Buffalo **Paper Mill Equipment –**

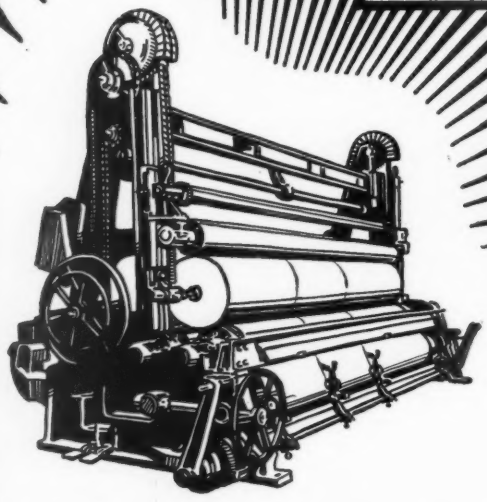
CAMACHINE

THE importance of the roll-winding operation definitely fixes the status of the Roll-Winder as an important piece of equipment in paper and board mills.

On the Roll-Winder depends whether due credit is done to all of the care and skill in bringing the web up to the reels. Good paper when wound into good rolls leaves nothing to regret, but the best of paper in poorly wound rolls serves to invite dissatisfaction.

CAMACHINES are
Good Roll Winders

CAMERON MACHINE COMPANY
61 Poplar Street, Brooklyn, New York, U. S. A.



-WN-

When writing CAMERON MACHINE CO., *please mention* PACIFIC PULP AND PAPER INDUSTRY.

PULP

PERKINS-GOODWIN CO.

Established 1846

551 FIFTH AVENUE, NEW YORK

PAPER

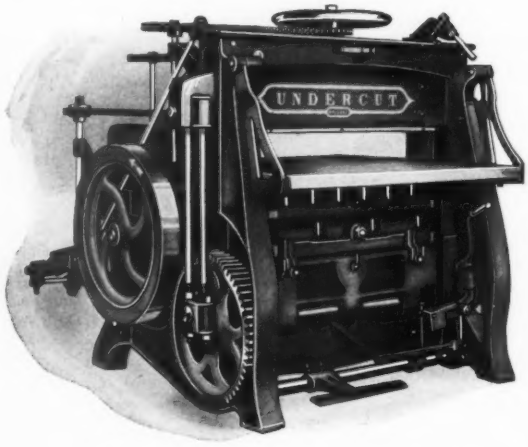
When writing to PERKINS GOODWIN CO. *please mention* PACIFIC PULP & PAPER INDUSTRY

PAPER MILL MACHINERY

JORDAN ENGINES—PUMPS—"RAINSTORM" SHOWER PIPES

The Undercut Trimmer

The AUTOMATIC PAPER CUTTING MACHINE, designed for PAPER MILL SERVICE, is of rugged and compact design, of great strength yet with simplicity on which you can with accuracy, quickly handle and cut any grade of paper or cardboard.



The AUTOMATIC CLAMP is governed in the pressure put upon the stock by the resistance to the knife in cutting through the stock. The tougher the stock, the greater the pressure will be upon it. The pile to be cut will automatically have the proper pressure put upon it, regardless of its height or width.

The BACK GAUGE has a face which is finished absolutely square to the side gauges, and is also parallel to the knife, regardless of its distance from the knife. The standard back gauge is in one piece. A triplicate back gauge can be furnished whereby three piles may be trimmed to different dimensions at each stroke of the knife.

THE POWER BACK GAUGE is furnished as regular equipment on all machines from 56" and up. It can be supplied on power machines smaller than 56". This is a device for quickly moving the back gauge back and forth by power. The control lever is conveniently located on the front of the machine and within easy reach of the operator. For making accurate adjustment a nickel plated handwheel is provided, which is located on the top of the cutter.

THE STARTING DEVICE on the UNDERCUT adds greatly to the safety of operation, in that it positively insures against accidental starting of the machine. On most cutters, the machine can be started by moving the starting handle in one direction, while on the UNDERCUT two separate movements in different directions are required.

PAPER BAG MAKING MACHINERY

—Established 1828—

The Smith & Winchester Mfg. Co.

Dept. MFP. **SOUTH WINDHAM, CONN.**

After all, EQUIPMENT *stands on its* USER'S *opinion*

IT'S not the manufacturer's "say-so" but the user's actual opinion that is the measure of value of a piece of equipment.

Our files are crowded with interesting "back-pats" from paper manufacturers who are using Noble & Wood equipment in the daily production of every variety of paper, from finest tissue to heaviest wall board. They tell the story of years of satisfying performance of

NOBLE & WOOD JORDANS

8 types, from massive Mastodon to tiny Baby Laboratory model—sturdily built for high pressure production; precisely designed for every possible degre of refinement.

NOBLE & WOOD BEATERS

Holland, Fast Circulating and the new High Density model that hydrates triple and normal quantity of stock in a single furnish, without added floor space.

PULPING, SHREDDING, WASHING, COOKING AND BLEACHING ENGINES, STUFF CHESTS AND PUMPS, SHELL LINERS, PLUG FILLINGS, BEATER ROLLS, BARS AND WOODS, BEDPLATES, CYLINDER WASHERS, EXPERIMENTAL EQUIPMENT and a host of well designed, smooth functioning accessories.

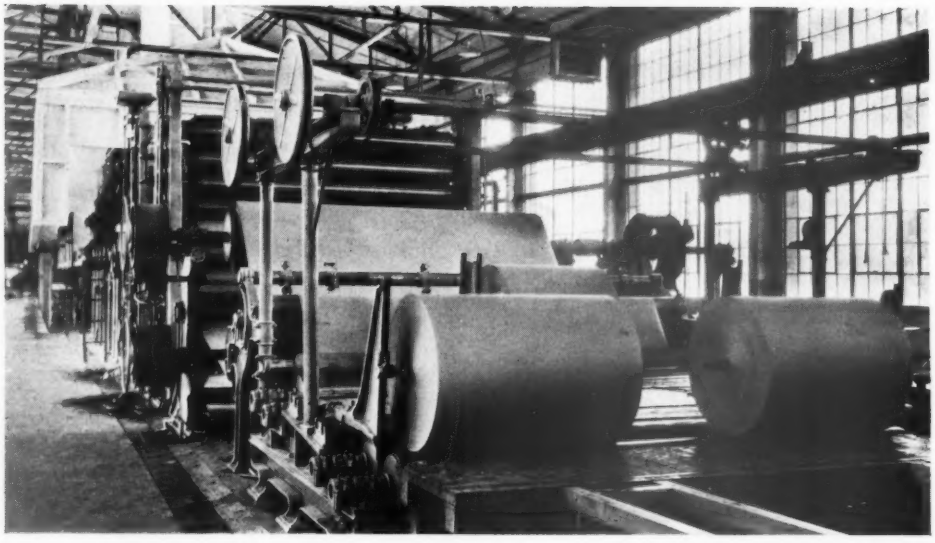
We'll be glad to show you the letters. Better yet, we'd like to show you how Noble & Wood equipment can speed up production, cut overhead and improve output in your own plant. Our engineers are at your service.

Noble & Wood Machine Co.

HOOSICK FALLS NEW YORK

When writing NOBLE & WOOD MACHINE CO., *please mention* PACIFIC PULP AND PAPER INDUSTRY.

The MOORE & WHITE CO.
PHILADELPHIA
U·S·A



Moore & White Heavy Type Four-Drum Winder

SELECTED BY

THE LONGVIEW FIBRE CO.

LONGVIEW, WASH.

For use on their New Board Machine

With this type of Winder perfectly wound rolls can be made without telescoping or wrinkling.

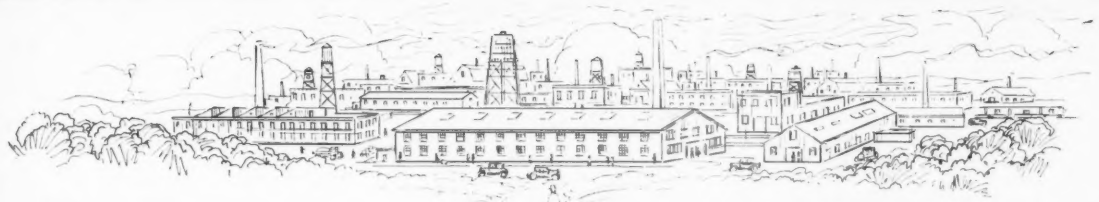
Tearouts can be made in independent rolls without affecting other rolls, thus eliminating waste and time piecing up.

Rolls of different diameters can be made at the same time from the web of paper made.

Plugged rolls can be wound on independent collapsible shafts any diameter, or cores of any size or description can be used with plain shafts and spools.

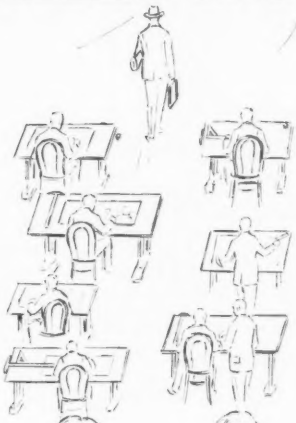
Catalog No. 1 and Complete Information on Request

When writing THE MOORE & WHITE CO., *please mention* PACIFIC PULP AND PAPER INDUSTRY.



An Organization That LIVES and WORKS ~ Every Minute of Every Day With PAPER MILLS and Their Problems

IF there *was* another organization that confined its entire time and resources to the heating and ventilating of Paper and Pulp Mills exclusively; that had our fund of engineering data gathered from years of experience and research in this field; that had our facilities for securing material, building equipment and installing it;—THEN, that organization could do for you all that we can do.



There are many good concerns that install general heating and ventilating systems—for churches, schools, theatres, public buildings. That is their field—not ours. But on paper and pulp mill work—the small job as well as the largest one—we are at home and can give you every advantage in designing and installing the right system for your particular problem.

Let Our Experience Save you Money.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street
CHICAGO

Main Office
30 E. 42nd STREET, NEW YORK

117 Tacoma Avenue
TACOMA, WASH.

ROSS ENGINEERING OF CANADA, LIMITED
NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

When writing to J. O. ROSS ENGR. CORP. *please mention* PACIFIC PULP & PAPER INDUSTRY

100%

All Acid Systems Installed During 1927 by
PACIFIC COAST SULPHITE MILLS

— WERE —

JENSSEN ACID TOWERS

OREGON PULP & PAPER CO.
RAINIER PULP & PAPER CO.
COLUMBIA RIVER PAPER MILLS
SPAULDING PULP & PAPER CO.
GRAYS HARBOR PULP CO.

—:—

We Are Also U. S. Representative for—

PAPER MACHINERY LTD., MONTREAL

And As Such We Sell—

KAMYR FELTLESS WET MACHINES
SLAB and ROUNDWOOD CHIPPERS
AUTOMATIC WOOD GRINDERS
REFINERS FOR SCREENINGS, ETC., ETC.

G. D. JENSSEN CO.

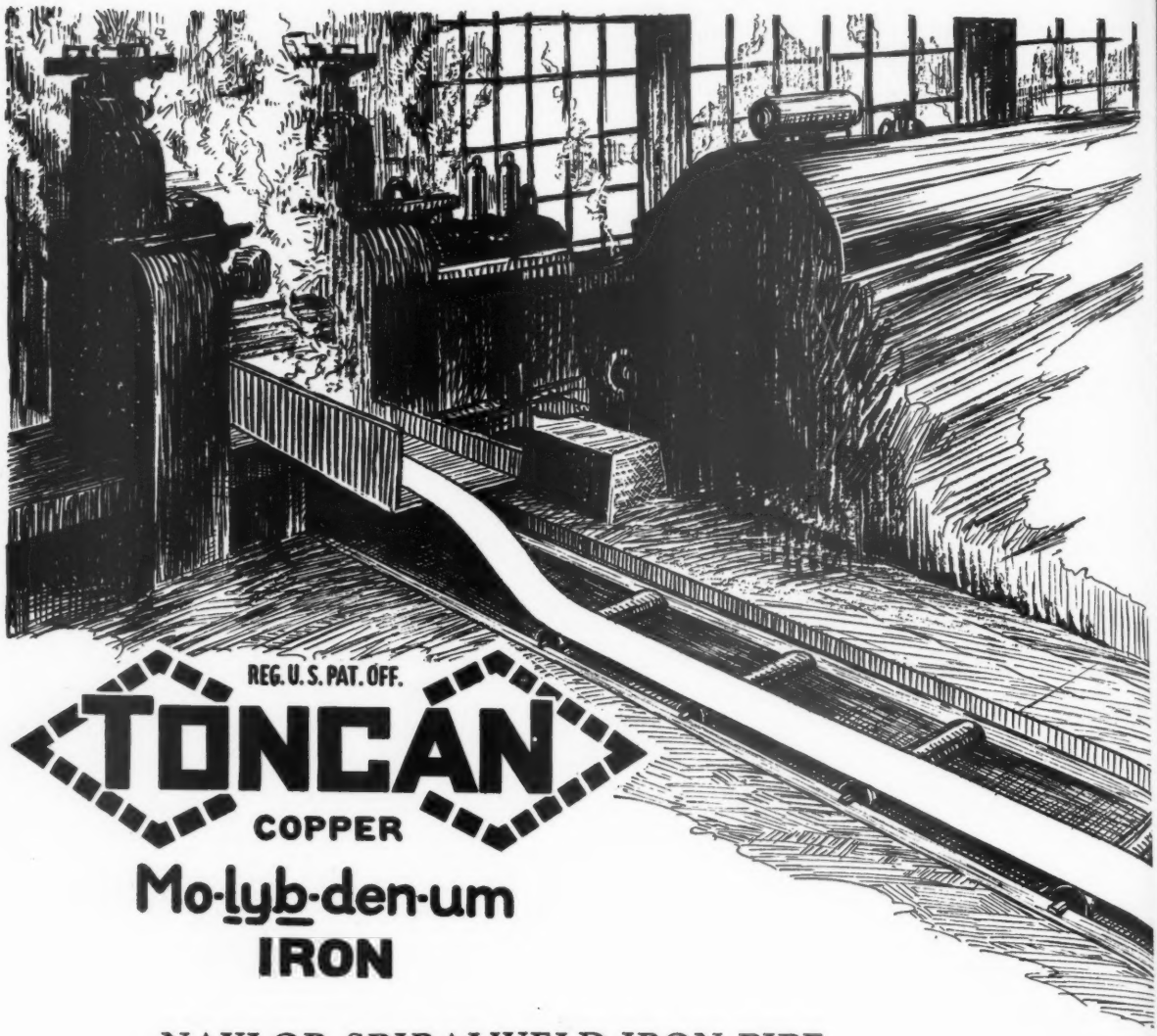
200 Fifth Ave., NEW YORK CITY

Western Office—1017 White Bldg., SEATTLE, WASH.

Performance

In the "1927 Passing Show" of the Pacific Pulp and Paper Industry, Bear Brand Liquid Chlorine and Bleach have played Stellar roles

When writing to GREAT WESTERN ELECTRO-CHEMICAL CO. *please mention* PACIFIC PULP AND PAPER INDUSTRY



REG. U. S. PAT. OFF.

TONCAN COPPER Mo-lyb-den-um IRON

NAYLOR SPIRALWELD IRON PIPE

is made of Toncan Iron because paper mill conveyance lines demand this rust and corrosion resisting alloy which assures four to fourteen times longer service.

Toncan Iron is a highly specialized alloy, combining copper and mo-lyb-den-um in scientific proportions with highly refined iron.

More than 10,000 tests, conducted by Toncan Metallurgists, prove Toncan Iron to be the most durable material of commercial price that can be used for making pipe.

Toncan Copper Mo-lyb-den-um Iron unquestionably represents the greatest advancement in pipe material made by the present generation.

AGATHON STEELS

The famous family of steel products under the Agathon trade-mark includes Alloy Steels, Special Finish Sheets, as well as all standard finishes. Electrical Sheets, Hot Rolled Strip, Toncan Enameling Iron, Toncan Oven-Lining, Galvannealed Sheets and Enduro Stainless Iron. Write for information on any product. It is gladly furnished.

CENTRAL ALLOY STEEL CORPORATION, MASSILLON, OHIO

Makers of AGATHON ALLOY STEELS

Cleveland Syracuse | Detroit Philadelphia | Chicago Los Angeles | New York Tulsa | St. Louis Cincinnati | San Francisco Seattle

WORLD'S LARGEST AND MOST HIGHLY SPECIALIZED ALLOY STEEL PRODUCERS

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TONCAN IRON—the most durable material of commercial price that can be used for making pipe—is the basis of longer life in Naylor Spiralweld Iron Pipe.

Naylor Spiralweld Iron Pipe is made in sizes from 4-inch to 12-inch diameters, to wrought pipe standards with threaded and flanged ends for standard pipe fittings—plain, slip joint and grooved ends for Victaulic Couplings.

Naylor Spiralweld Iron Pipe is not materially affected by rust and corrosion from acids and alkalies, which so quickly destroy pipe of other materials.

Naylor Spiralweld Iron Pipe offers an absolutely smooth inside and true diameter which provides a lower frictional resistance than any iron or steel pipe.

Naylor Spiralweld Iron Pipe reduces to a minimum capillary attraction and clogging, due to slime.

Naylor Spiralweld Iron Pipe provides light weight for ease and economy of shipping, handling and installing.

Naylor Spiralweld Iron Pipe is manufactured black, galvanized and asphalt dipped.

NAYLOR SPIRAL PIPE COMPANY

Main Office and Plant, 1240 East 92nd Street, Chicago

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DETROIT, 1300 CADILLAC SQ. BLDG. — SAN FRANCISCO, CAL., MILLS BLDG. — CHARLOTTE, N. C., REALTY BLDG. — KANSAS CITY, MO., 1005 DAVIDSON BLDG.

DENVER, COLO.; SALT LAKE CITY, UTAH; EL PASO, TEX.—MINE AND SMELTER SUPPLY CO.

OMAHA, NEB.—INTERSTATE MACHINERY AND SUPPLY COMPANY.

MONTREAL, CANADA—MECHANICAL EQUIPMENT COMPANY, NEW BIRKS BUILDING.

Through the courtesy of the Central Alloy Steel Corporation and the Naylor Spiral Pipe Company, we are privileged to send to interested parties a sample section of Naylor Spiralweld Iron Pipe, made of Toncan Iron. Send for it, handle it, examine it at our expense. There is no obligation involved.

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BELLINGHAM, WASH.

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ANACORTES, WASH.

Makers of—

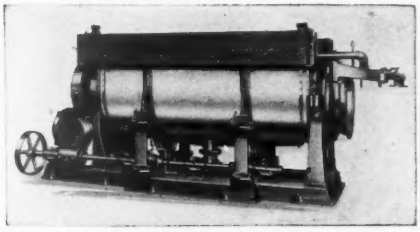
Fidalgo BRAND

High Grade—Strong Unbleached Sulphite Pulp

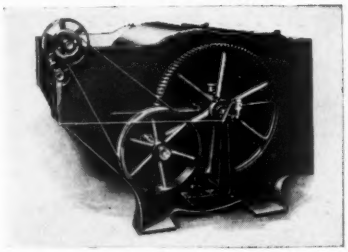
Equipped for Rail and Cargo Shipments

BIRD MACHINERY

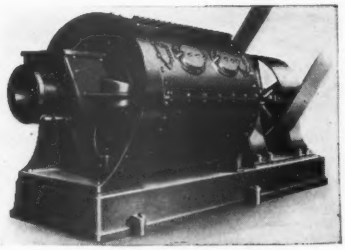
on the coast



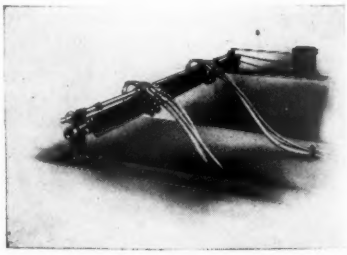
THE BETTER BIRD SCREEN
Twenty odd thousand tons of paper pass through Bird Screens daily.



THE BIRD SAVE-ALL
High efficiency; lowest cost per pound of fibre recovered.



THE BIRD PULP SCREEN
Great capacity; remarkable savings in power, floor space and maintenance.



THE VICKERY FELT CONDITIONER
Eliminates shut downs for felt washings. Of 450 sold 287 represent repeat orders.

THE VICKERY DOCTOR
For keeping EVERY roll always clean.

The soundness of your investment in Bird Machinery is indicated by the fact that the following mills:

Cascade Paper Company
Columbia River Paper Mills
Crown Willamette Paper Company
Hawley Pulp and Paper Company
Inland Empire Paper Company
Longview Fibre Company
National Paper Products Company
Oregon Pulp and Paper Company
Washington Pulp and Paper Corporation

use a large number of

Bird Screens
Bird Pulp Screens
Bird Save-Alls
Vickery Felt Conditioners
Vickery Doctors

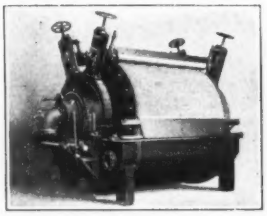
Ask us to show you what Bird Machinery can earn for you.

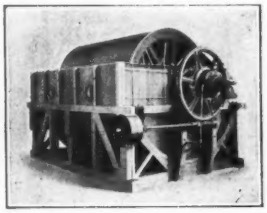
BIRD MACHINE COMPANY

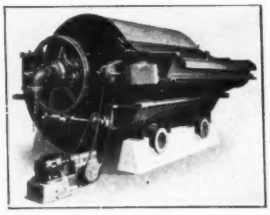
South Walpole : : Massachusetts

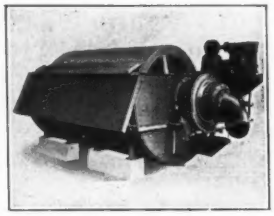
1563

OLIVERS









In 1926 "paper" OLIVERS were first placed in actual mill operation in the Pacific Coast States.

At the beginning of 1928 42½ per cent of the Pacific Coast States mills had OLIVERS in operation.

These mills are handling 78% of the total tonnage of wood pulp, paper and box board produced in the Pacific Coast States.

Oliver Thickners, Kraft Rewashers, Lime Mud Washers, Ground Wood Deckers, Save-Alls need no better recommendation of their efficiency than these figures.

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4th and Madison Sts.

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E. L. Bateman, Locarno House

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W. A. Ramsay, Ltd.

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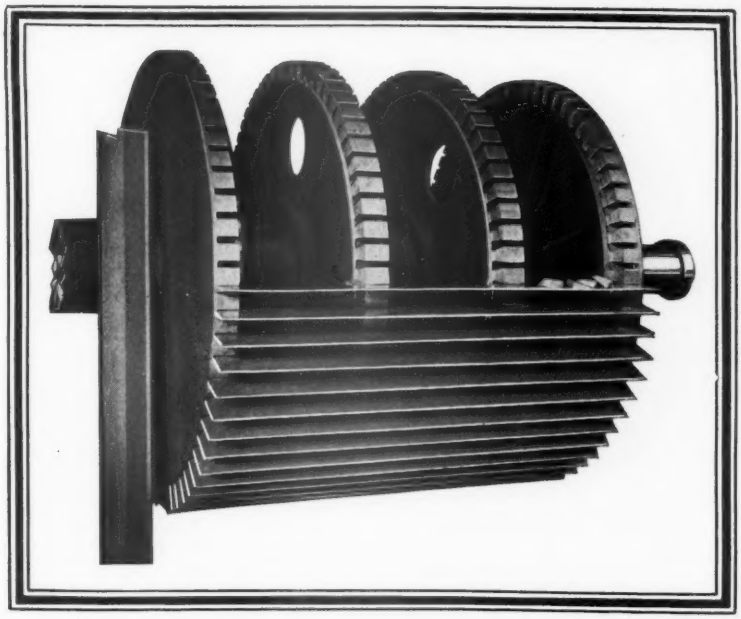
American Asphalt Roof Corporation
American Tar Products Company
Analomink Paper Company
Ancram Paper Mills
Arrowhead Mills Inc. (46)
Backus Brooks Co.
Ball Brothers Company
Barrett Companies (11)
Beckman-Dawson Company
Beaver Board Companies (19)
Bloomer Brothers Company (9)
Bird & Son (17)
Bogalusa Paper Company (12)
Brownville Board Company
Carthage Paperboard Company
Phillip Carey Company (46)
Certainteed Corporation (40)
Champion Coated Paper Company (22)
J. G. Cherry Company
Chicago Coated Board Company
Cia Industria Papels e Cartonagen
Consolidated Paper Company (71)
Container Corp. of America
Coshocton Strawboard Co.
Cropper & Company (11)
Defiance Paper Company
Dixon Board Mills (8)
Downingtown Paper Company
Draycott Mills, Inc. (10)
Dunn Sulphite Paper Company
Eddy Paper Company (16)
Endicott-Johnson Company
Federal Paperboard Company
Field & White Co.
Flintkote Company (10)
Fort Orange Paper Co.
Foster Box Board Co.
Fox Paper Co. (9)
Colin Gardner Paper Co. (9)
P. H. Glatfelter Co.
Robert Gair Co.
Grays Harbor Pulp Co.
Halltown Paper Board Co.
Hanna Paper Corp.
Hoboken Paper Mills
Indiana Board and Filler Co.
Lafayette Box Board Co.
John Lang Paper Co. (16)
La Salle Paper Co.
Lawless Bros. Paper Co.
Lewis Slocum & Le Fevre
Lockport Paper Co. (9)
Logan-Long Co.
Mac Sim Bar Paper Co.
Marion Paper Co.
McEwan Bros. (9)
R. B. McEwan & Son
Mengel Box Co.
Midvale Paper Board Company, Inc.
Mid West Box Co.
Minnesota & Ontario Paper Co.
Mobile Paper Mills
Monroe Paper Products Co. (9)
Morris Paper Mills
Moyer & Pratt
Mutual Box Board Co.
Natick Box & Board Company
National Biscuit Co.
National Paper Products Co. (8)
National Roofing Co.
B. F. Nelson Co.
Newark Box Board Co.
New Castle Paper Mills
North Star Strawboard Mills
Ohio Box Board Co. (11)
Ohio Paper Co.
Orenda Corp.
Oswego Falls Corp.
Paper Board Corporation (10)
Paraffine Cos. (16)
Pioneer Paper Co. (10)
Proincial Paper Mills, Ltd.
Rainier Pulp & Paper Co.
Raybestos Co.
Richardson Co. (9)
Sali Mountain Co.
San Rafael Paper Co. (8)
Saranac Pulp & Paper Co.
Schmidt & Ault Paper Co.
Sidney Roofing & Paper Co.
Frank Smith Paper Co. (8)
Howard Smith Paper Co.
John Strange Paper Co.
Thames Paper Co.
Taggert Bros.
Union Mills Paper Mfg. Co.
Three Rivers Paper Co.
Tumwater Paper Mills Co. (4)
United States Gypsum Co.
Upson Co.
Valve Bag Co.
Victoria Paper Co.
Wakana Paper Co.
J. R. Walker & Co., Ltd.
West Jersey Paper Mfg. Co.



Upwards of 800 Dilts Bandless Rolls Are in Use Today

Placed end to end these 800 rolls would make a line two and a quarter (2¼) miles in length.

They would weigh about eight million (8,000,000) pounds.

They would have a total fly bar surface of over two and a half million (2,500,000) inches.

It would require the life time of five mechanics (taking their average working hours) to build these 800 rolls.

Revolving at standard speed the surfaces of these 800 rolls would travel over four hundred thousand (400,000) miles per day—over one hundred twenty million (120,000,000) miles per year.

In operation, and averaging 1,000 lbs. of stock per hour, they would turn out over ten thousand (10,000) tons per day—over three million (3,000,000) tons per year.

Lasting on an average of three times as long as other rolls without re-filling, the saving to the mills is beyond calculation. Cost of filling, loss of time through idle beaters, damage from accident and breakage—all this is reduced to the very minimum through the use of these 800 Dilts Bandless Beater Rolls.

Beater rolls are a vital part of the equipment of your mills, because,

—*"Your paper is made in your beaters."*

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE ~ 15 PARK ROW ~ NEW YORK CITY

W G.E.SMITH, PRESIDENT & TREAS.
S C.E.SMITH, VICE-PRESIDENT

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SMITH AND VALLEY IRON WORKS CO.

Builders of

VALLEY IRON WORKS
PULP AND PAPER MILL MACHINERY

SMITH & WATSON
LOGGING MACHINERY

400 FRONT STREET
PORTLAND, OREGON

Manufacturers of

Pulp and Paper Mill Machinery *for* Pacific Coast Mills

Voith High Pressure Stock Inlet
Valley Plug Valves
Niagara Beaters
Valley Size Testers
Valley Laboratory Equipment
Wolf Chippers
Holland Beaters
Washing and Bleaching Engines
Agitator Equipment and Tanks
High Speed Holland Beaters
Valley Continuous Beaters
Valley Bandless Beater Rolls
Valley Ground Wood Refiners
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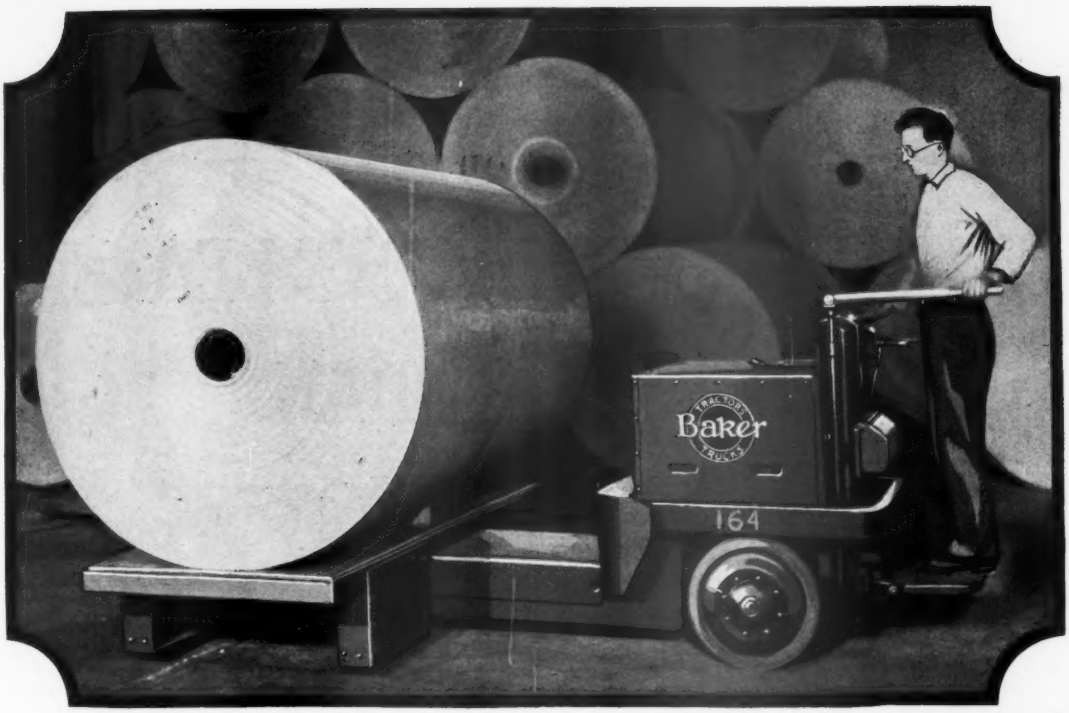
Voith Centrifugal Pulp Screen
Stuff Chests (Vert. and Horiz.)
Barker and Barker Attachments
Valley Diaphragm Screens
Wet Machines and Roll Skinners
Deckers (Single and Double)
Valley Centrifugal Pumps
Duplex and Triplex Stock Pumps
Chippers and Rechippers
Chip Screens (Rev. and Recip.)
Valley Cylinder Machines
Cylinder Moulds and Couch Rolls
Press Rolls and Felt Rolls
Valley Loft Dryers
Quick Opening Dump Valves
Pulp Grinders
Jordan Engines
Wood Splitters
Heavy Transmission
Cut Off Saws
Tanks
Special Pulp and Paper Equipment
Voith Screw Presses

Eastern Manufacturing and Sales Division

VALLEY IRON WORKS COMPANY, Appleton, Wisconsin



3 Tons of Paper—a One-Man Job—with a Baker

PRODUCTION goes up, costs go down when Baker Trucks get the job in a paper mill. In feeding pulp to the paper-making machine, in carrying rolls away from it, in storing or loading, one man and a Baker will do more work than 8 or 10 men with hand trucks, and do it with far greater safety.

The Baker Elevating Truck shown above pulls a roll of paper onto a skid, carries the loaded skid from machine to warehouse, and deposits it where you want it, all in a matter of minutes. Baker Hy-Lift Trucks lift cases and rolls with perfect ease, run them to the warehouse or car, and tier them 2-high.

Paper mills all over the country have found that Baker Trucks save 75% of handling costs and entirely pay for themselves in two to six months. They travel anywhere, thread narrow aisles, turn sharp corners, stand the greatest overload. Anyone can handle a Baker, and because these sturdy little giants are built to work all day and every day for years, they stand the roughest kind of handling and never get out of order.

We'll be glad to tell you in detail how other paper mills have reduced payroll and speeded production with Bakers. Or we'll send an engineer to study any special problem you may have, and suggest the mechanical means of solving it.

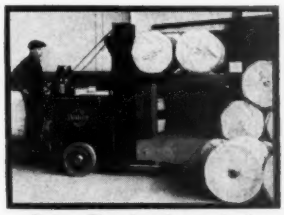
ELECTRIC TRACTORS AND TRUCKS
Baker

98% of all vital parts of Baker Trucks, Tractors and Cranes are standardized and interchangeable — assurance of ease and economy in the rare cases where servicing is necessary.

THE BAKER-RAULANG COMPANY · *2180 West 25th St., Cleveland, Ohio*

Because it lifts and stacks rolls and cases higher than manpower could do, a Baker Hy-Lift Truck often increases the capacity of storage space by 30%.

A Baker Elevating Truck, at an all-inclusive cost of $9 a day for truck and operator, will do as much work as you now pay men $36 to $90 a day to do.



Baker Trucks almost think for themselves—they pick up, carry, set down and stack loads, in a matter of minutes, that it would take a gang of men an hour to do.

The Hermann Manufacturing Company

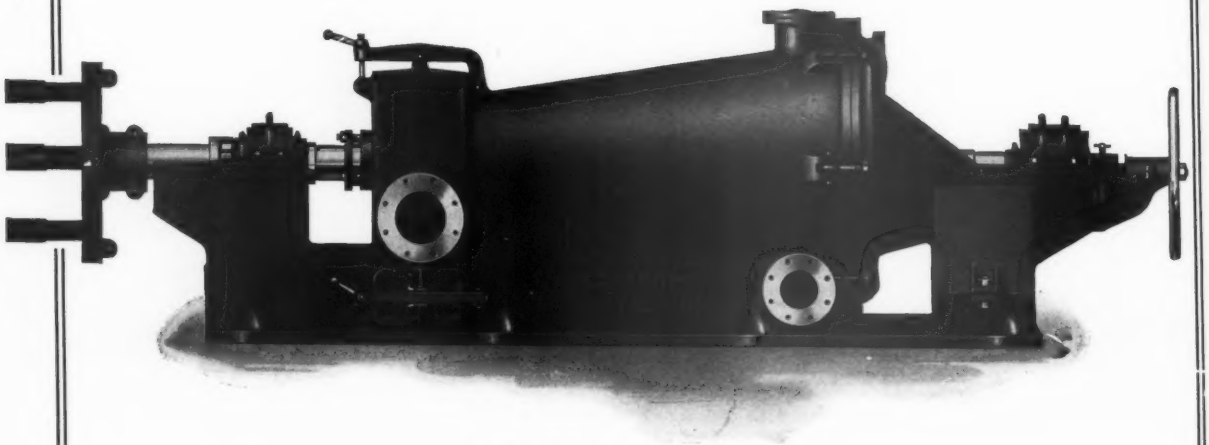
LANCASTER, OHIO

Builders of

THE CLAFLIN CONTINUOUS BEATER

and the

HERCULES JORDAN



No. 3 Motor Driven Hercules Jordan

The No. 3 Hercules

Saves power **by providing full length alignment of knives and minimizing bearing friction.**

Increases quality of stock **by maintaining same knife clearance over all the refining surface.**

Increases production **by increasing refining surface actually working.**

Decreases maintenance, **and shut-down time for changing fillings to almost nothing.**

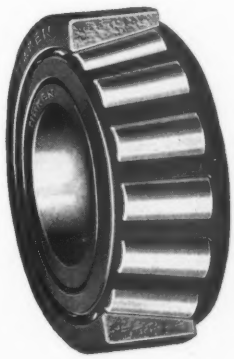
Lessens filling costs **since no grinding in is necessary, the design allows greater wear on the knives and only about *half as much waste in the worn out filling.***

A. H. COX & COMPANY
Seattle, Washington
U. S. Pacific Coast Representatives

WATEROUS, LTD.
Brantford, Ontario
Canadian Representative

What Link-Belt Says About Timken Bearings

Why We Use Timken Anti-Friction Bearings



JUST as any structure to be secure must rest upon a firm base, so a successful conveyor idler must be built upon a substantial bearing. The efficiency of the idler, more than any other one thing, determines the service given by the conveyor. For this reason we use the best bearing for a belt conveyor idler—namely, Timken Tapered Roller Bearings.

The durability of Timken Bearings has been thoroughly proved in many fields, notably the automobile industry. In automobile front wheels, these bearings operate under similar conditions but more severe than that which is imposed upon bearings mounted in belt conveyor idlers. We use as large bearings as are found in many automobile front wheels, yet the diameter of idler rolls (and consequent shock in belt conveyor service) is very much less than that of the automobile wheels.

Belt conveyor service demands a bearing that will carry both heavy radial and thrust loads, on an anti-friction basis. At the same time, the bearings must run with very little attention year in and year out. The fact that Timken Tapered Roller Bearings have successfully demonstrated their ability to meet these requirements is our reason for using them exclusively in Link-Belt Anti-Friction Belt Conveyors.

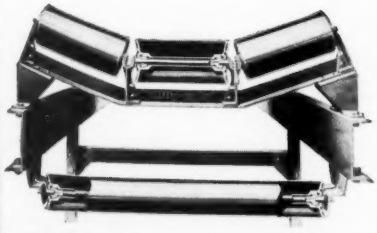
LINK-BELT

67

Reproduction of Page 67 of the new 144-page Data Book published by the Link-Belt Company

NEVER in the history of Belt Conveyor construction has there been so strong an endorsement of Timken Tapered Roller Bearings. Years of experience under every condition of hard service have satisfied Link-Belt Company that no other type of bearing is sturdy and rigid enough for this extremely hard service.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO



TIMKEN *Tapered Roller* BEARINGS

Announcing

the incorporation on November 3rd, 1927, of the

Tacoma Electrochemical Company

for the purpose of building a plant at
Tacoma, Washington

to produce

Liquid Chlorine
Caustic Soda

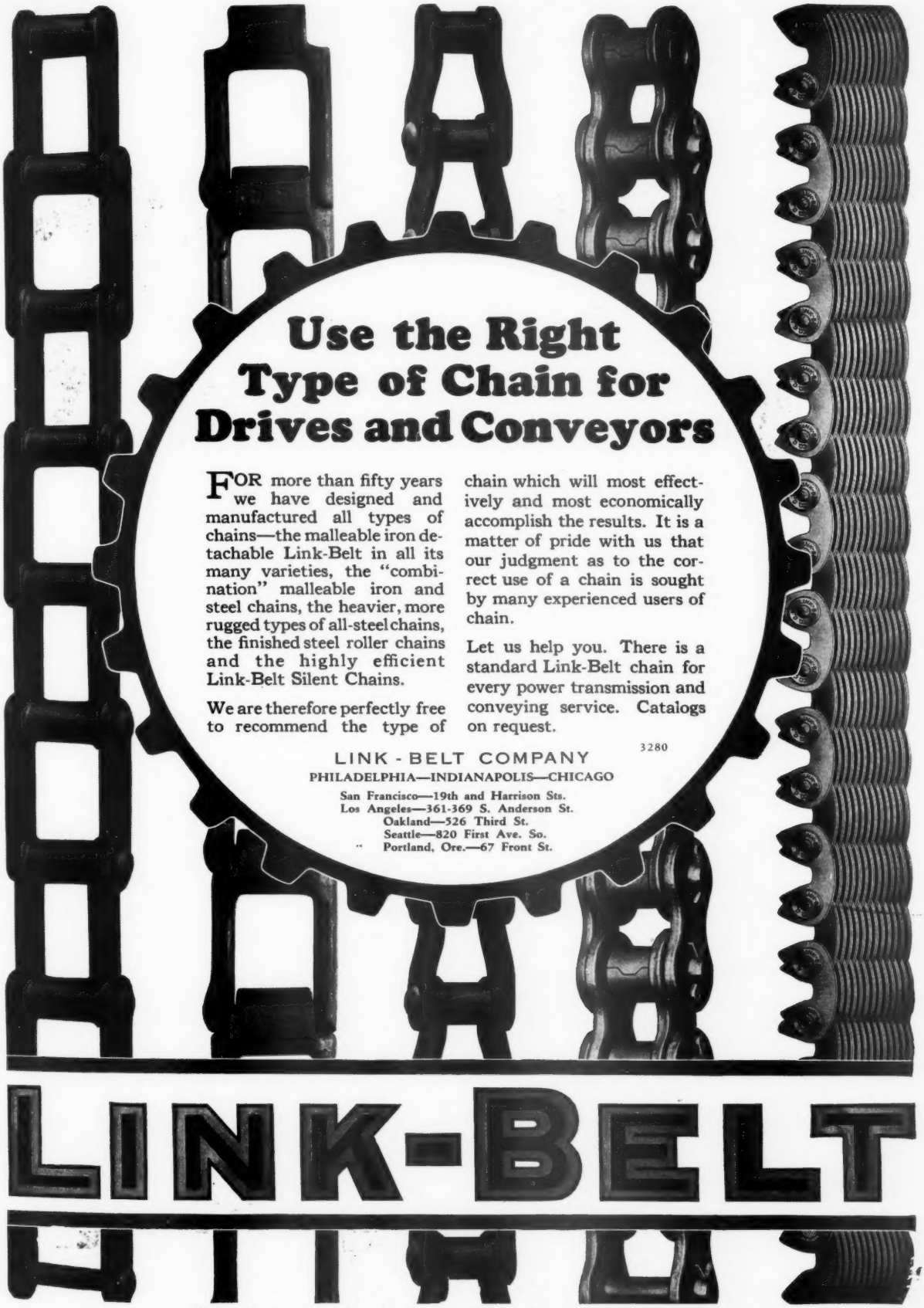
and other chemicals

will be in operation in 1928

The entire capital of this Company
is owned by the

Pennsylvania Salt Manufacturing Company

Philadelphia, Pa.



Use the Right Type of Chain for Drives and Conveyors

FOR more than fifty years we have designed and manufactured all types of chains—the malleable iron detachable Link-Belt in all its many varieties, the "combination" malleable iron and steel chains, the heavier, more rugged types of all-steel chains, the finished steel roller chains and the highly efficient Link-Belt Silent Chains.

We are therefore perfectly free to recommend the type of chain which will most effectively and most economically accomplish the results. It is a matter of pride with us that our judgment as to the correct use of a chain is sought by many experienced users of chain.

Let us help you. There is a standard Link-Belt chain for every power transmission and conveying service. Catalogs on request.

3280

LINK-BELT COMPANY

PHILADELPHIA—INDIANAPOLIS—CHICAGO

San Francisco—19th and Harrison Sts.
Los Angeles—361-369 S. Anderson St.
Oakland—526 Third St.
Seattle—820 First Ave. So.
Portland, Ore.—67 Front St.

LINK-BELT

Photo by courtesy F. W. Hooper

PACIFIC MILLS, LTD., OCEAN FALLS, B. C.

PACIFIC PULP and PAPER INDUSTRY

Review Number

Published by MILLER FREEMAN SEATTLE, WASH., JANUARY 31, 1928

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PACIFIC PULP and PAPER INDUSTRY

Devoted to the Paper Manufacturing Industries of the Western States, Alaska and British Columbia

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Reviewing the Pacific Coast

Pulp and Paper Industry Experiences Remarkable Growth in New and Expanded Mills in 1926-1927

WITHOUT question the spotlight of the pulp and paper industry has been focused on the Pacific Coast in the past year or more. Pulp and paper manufacture on the Coast is not new in point of years, but as an industry it has been carried on with no undue emotion until very recently. Some authorities have stated that the Pacific Coast has displayed more activity in the pulp and paper industry in the past five years than has any other section of the United States in a like period of time. Certainly the interest in the Coast has been growing, and during the year 1927 this interest attained a peak that has been described with such terms as "epidemic construction", "frenzy", "furore" and others of no less calibre. Accelerated construction on the Pacific Coast, coupled with a very large crop of new projects, has aroused an interest in the East and Middle West that brought to the Pacific Coast during the year a great many representatives from associations, prominent paper mills, financial institutions, equipment houses and others directly or otherwise concerned in the health of the industry. Circulation of these visitors from the Eastern states through the Pacific Coast region has perhaps done more than any one thing else to concentrate attention upon the Pacific Coast.

New Mills Built

There have been new mills built on the Pacific slope, and old mills have expanded. But the effects of the new interest in the Pacific Coast—which many term as "the last stronghold of timber resources for the pulp and paper industry"—have been more far-reaching than the mere adding of a few payrolls to the Western states. The lumber industry—sick for many years—has looked upon the newer industry in two lights, as an aid to one who is down, and as a competitor to make life more miserable. Entire communities have taken an interest in pulp and paper, and the daily press has been full of news and comment. In the wake of the developing mills there has followed an auxiliary development in machinery and supply fields. Western manufacturers have added pulp and paper mill equipment to their lines and Eastern equipment manufacturers have looked with new interest to the Pacific Coast.

A great deal of publicity has attended the Coast development in the past year. This has had its good and its bad effects. Certainly the activity of the industry in the Pacific Northwest has caused a mingled feeling of wonderment and unrest in the industry, perhaps more so in those older manufacturing centers of the industry in the Middle West states and the Atlantic seaboard.

The natural first question with regard to all this Pacific Coast noise is, "What has actually happened?" The purpose of this article is to tell what has happened as well as to touch on the trend in the West as it appears at the present time. Since this is a first review of the Pacific Coast activity it is necessary to go somewhat beyond the confines of the calendar year. This statement will explain why some of the later developments of 1926 are included in the figures given. The review of Pacific Coast development would perhaps be better described as "recent" than a "review of 1927."

The Coast as a Unit

Speaking now of the Pacific Coast as a unit which includes Alaska, British Columbia, Washington, Oregon and California we find eight new mills which have gone into operation within the past eighteen months. Twelve mills have made extensive improvements and added to existing capacities. Three new mills were definitely under construction, at the close of the year 1927. One mill which had been idle for some years was put into operation for a brief period in 1927 and the prospect is that it will be extensively rebuilt and its capacity increased by 100 per cent or more.

What was counted in the paragraph above represented actual accomplishment. These extensions of the pulp and paper industry on the Pacific Coast meant the addition of 15 new machines. Four of these were installed for the manufacture of newsprint. Two machines were installed for book paper production. Two more began the production of board. Four machines began the production of wrapping papers. Two began the manufacture of tissue or fruit wrap, and one cylinder machine was installed for pulp drying.

At the same time the pulp capacity of the Pacific Coast has been augmented by the installation of 25

new digesters. Seven of these are sulphate pulp digesters, and four are used in the soda process, while all the others are used for sulphite.

Mills now under construction will add at least 13 digesters to the present total of 25. Eight of these will produce kraft pulp and the remaining five will be for sulphite.

Mechanical pulp capacity has also kept pace. In the same period which was considered above, 45 grinders have been added to the Pacific Coast pulp industry. The added daily tonnage in pulp for the Coast represented in this period is as follows: mechanical, 410; sulphite, 480; sulphate, 160; and soda, 25. Paper and board tonnage of all classes which has been added in the same period is 854 tons. Any figure which would represent the total amount invested in making these additions to the pulp and paper industry of the Pacific Coast in the past year and one-half can only be an estimate because actual figures are not always available. It is believed, however, that these improvements will total not less than a round 27 millions of dollars. The projects which were definitely under way at the beginning of the year will bring this total up another $8,200,000.

Not a Forecast

To forecast what the future holds in the way of further development in the industry for 1928 or the years following is dangerous and it is not the purpose of this article to forecast. No project is assured until construction has been completed and production begun. One can, however, recount what is actually visible in the way of further development without making any prediction regarding the likelihood of the completion of the project. For the purpose of convenience each district will be considered as a unit.

Although Alaska has been looked to as a future pulp and paper territory for quite some time it obtained its first formal recognition in 1927 when the federal government made two sales of large pulp timber tracts. The conditions under which these tracts were sold call for the building of pulp and paper mills with initial capacities of 200 tons each with certain expansions after that time. There is a possibility of expending on these two projects any amount from ten to fifty millions of dollars. Alaska is generally conceded as logical newsprint territory. Granting this it is probable that actual development in Alaska may be retarded for a time until the present condition of over-production in the newsprint industry has to some extent righted itself.

PULP TONNAGE ADDED TO PACIFIC COAST MILLS—1927*

Capacities Stated in Tons per 24-Hour Day

Name of Mills	Location	Mechanical	Bleached Sulphite	Unbleached Sulphite	Sulphate	Soda	
British Columbia							
B. C. Pulp & Paper Co., Ltd.	Port Alice		20				
B. C. Pulp & Paper Co., Ltd.	Woodfibre			10			
Powell River Co., Ltd.†	Powell River	170		60			
Sidney Roofing & Paper Co., Ltd.	Victoria	10					
Washington							
Columbia River Paper Mills	Vancouver	10		20			
Everett Pulp & Paper Co.	Everett					25	
Fidalgo Pulp Mfg. Co.	Anacortes			25			
Longview Fibre Co.	Longview				100		
Occident Pulp & Paper Co.	Edmonds	30					
Rainier Pulp & Paper Co.	Shelton		135				
San Juan Pulp Mfg. Co.†	Bellingham			45			
Tumwater Paper Mills	Tumwater	20					
Wash. Pulp & Paper Corp.	Port Angeles	100					
Oregon							
Hawley Pulp & Paper Co.‡	Oregon City	100					
St. Helens Pulp & Paper Co.†	St. Helens				60		
Spaulding Pulp & Paper Co.	Newberg			50			
Oregon Pulp & Paper Co.‡	Salem		20				
	Totals	440	175	210	160	25	
	Total, all grades						1010

*Includes some mills which completed construction late in 1926 and some expansion programs not completed Dec. 31, 1927.

†Began production late 1926.

‡Expansion program not completed Dec. 31, 1927.

British Columbia Possibilities

British Columbia is another territory which has immense possibilities in pulp and paper. Its stands of timber both on the Coast, on Vancouver Island and in the interior are vast in extent. The position of the province with respect to trade is of course different from that of the United States, but with no duty prevailing on many classes of product imported into the United States this Western fringe of Canada has a good outlook for the future. In some respects the province enjoys trade advantages which are not accorded the United States, a specific example of which is the Canadian-Australian treaty which greatly favors the paper trade between British Columbia and Australasia.

In British Columbia at least three projects are in prospect on which some work has actually been done. The Canadian-Crown Willamette Co. Ltd. early in 1927 completed negotiations with the British Columbia government for water power and timber rights on Vancouver Island. It is planned to develop a huge newsprint mill with an initial capacity of perhaps 200 tons and an ultimate capacity of 1,000 tons daily. The power would be developed on the Campbell River where, engineers say, water power up to perhaps 160,000 horsepower can be developed. A corps of engineers were in the field during 1927 making preliminary data studies, but nothing further than this work had been announced at the close of the year.

Projects in Sight

On the Nimpkish River on Vancouver Island the Canadian Forest Products Co. Ltd. has in its possession a small idle mill. This company, which is backed by International Harvester Co. interests, also made preliminary studies in 1927 and a possible big development is seen on this project which may run to $15,000,000.

Nearer Vancouver, B. C., the Howe Sound Pulp & Paper Co. passed in 1927 into the hands of the Leadbetter interests which operate three mills in the United States on the Pacific Coast. This mill, which has a daily capacity of 40 tons of sulphate pulp, was operated for about two months in 1927 as a sort of tryout and then closed down again. While no definite announcement had been made at the close of the year the prospects seemed good for an extensive remodeling of the mill in the very near future and an increase in capacity to 100 tons.

British Columbia had other projects proposed during the year, none of which, however, bore any fruit at least in 1927, although what they hold for the future is uncertain.

Although there were no new mills built in British Columbia in 1926 or 1927, some very creditable additions were made to the existing industry. The Powell River Co. Ltd., completed a most extensive program

in late 1926 and became with the completion of the program the largest single producer on the Pacific Coast. The B. C. Pulp & Paper Co. Ltd., passing into new hands, carried on a consistent program of improvements and increased its capacity to a modest degree. In Victoria the Sidney Roofing & Paper Co. Ltd., added a small ground wood mill and installed a board machine.

The greatest activity on the Pacific Coast was displayed in Western Washington. This section with its great area of tide water reaching into the timbered country has apparently been looked upon with greatest favor for immediate development. Six new mills began production either in late 1926 or in 1927. Five others carried on extensive improvement programs and added to their capacities. Three new mills were definitely under construction when the New Year was ushered in. Several new projects were showing on the horizon with construction announced for early in 1928, while rumors of other mills were strongly current.

A Big Program

Perhaps the most extensive program of improvement was that completed by the Washington Pup & Paper Corp., at Port Angeles, Wash. This mill, a subsidiary of the Zellerbach Corporation, greatly enlarged its ground wood mill, added a new 234-inch newsprint machine, made extensive hydro-electric developments and in other ways improved its plant.

At this point we are reminded that the Zellerbach and affiliated interests have evidenced by far the greatest activity on the Coast in the past two years. In addition to increasing the capacity of the Port Angeles mill these interests are to be credited with the following:

Completed the Rainier Pulp & Paper Co., at Shelton, Wash., in May, 1927. This is a 135-ton bleached sulphite pulp mill.

Began construction on and semi-completed the Grays Harbor Pulp Co. 150-ton bleached sulphite pulp mill at Hoquiam, Wash.

Began construction on a 100-ton mill at Port Townsend, Wash., for the manufacture of kraft test liner. This mill is known as the National Paper Products Co.

Fifteen Million Dollars

The developments which the Zellerbach and affiliated interests had actually completed or had under construction at the close of 1927 represented a round total of some 15 millions of dollars. There were apparently good prospects that further developments could be expected from this group within the coming year or two, and although some hints of further mills had been dropped, nothing in the nature of an official announcement had been made. However, the rapidity with which the strong Zellerbach interests have moved into the manufacturing end of the industry, together with the highly developed selling organization which they have built up, are pointed out as two factors which give weight to any rumor of further development which attaches to the Zellerbach organization.

Second in point of investment and perhaps an equal in point of interest is the new $3,000,000 sulphate mill of the Longview Fibre Co., at Longview, Wash. Longview itself, sprung up over night with a highly modern young city appearing on the sandy banks of the mighty Columbia River, is interesting enough. Its huge lumber mill, the largest in the world, had added to it in 1927 a thoroughly modern sulphate mill which has been designed to operate exclusively on the wood which the saw mill had hitherto wasted in the production of lumber. The saw mill and pulp mill together form an important economic wood-using industrial unit.

PAPER AND BOARD TONNAGE ADDED TO PACIFIC COAST MILLS—1927*

Capacities Stated in Tons per 24-Hour Day

Name of Mill	Location	News Print	Sulphite Wrapping	Kraft Wrapping	Book	Board	Tissue	
British Columbia								
Powell River Co., Ltd.†	Powell River	240						
Sidney Roofing & Paper Co., Ltd.	Victoria					20		
Washington								
Cascade Paper Co.	Tacoma				25			
Columbia River Paper Mills	Vancouver		40					
Everett Pulp & Paper Co.	Everett				25			
Longview Fibre Co.	Longview					100		
Pacific Coast Paper Mills	Bellingham						15	
Tumwater Paper Mills	Tumwater		40					
Wash. Pulp & Paper Corp	Port Angeles	120						
Oregon								
Hawley Pulp & Paper Co.‡	Oregon City	120						
Oregon Pulp & Paper Co.	Salem		40					
St. Helens Pulp & Paper Co.†	St. Helens			60				
California								
California Fruit Wrapping Mills, Inc.†	Pomona						9	
	Totals	480	120	60	50	120	24	
	Total, all grades							854

*Includes some mills which completed construction in late 1926 and one mill which had not completed expansion on Dec. 31, 1927.
†Began production late 1926.
‡Expansion program not completed Dec. 31, 1927.

The Longview Fibre mill really marks the entry of Eastern pulp and paper manufacturers into the Pacific Coast field, serving to bring home the realization of diminishing wood supplies in the East and Middle West and the supply of available timber in the Pacific Coast region. This mill, backed by interests of the old-established Thilmany Pulp & Paper Mills, of Kaukauna, Wis., marks a pioneer step in the Pacific Coast pulp and paper industry in the utilization of Douglas fir waste wood on an exclusive basis. The Longview mill is producing a kraft board, a new product to the Coast, making the marketing efforts of this mill stand also in the light of pioneering.

Additional tonnage of wrapping paper was given to the Coast with the installation of a new machine at the Columbia River Paper Mills, at Vancouver, Wash., and the new Tumwater Paper Mills Co. Both mills are making sulphite papers. The first is an expansion of a rather large interest which controls four mills, while the Tumwater mill is an entirely new venture, a realization of plans which have been maturing for several years. The Tumwater mill is strictly a Pacific Coast enterprise, as all of the officials are men who had their training in mills on the Western slope.

Book Paper Increases

Washington produces all of the book paper produced on the Pacific Coast. All the more interest, therefore, that the two existing book paper mills, the Cascade Paper Co., and the Everett Pulp & Paper Co., should both improve their plants and materially add to mill capacities in the same year. This increased tonnage has brought about a difference in production and consumption of book paper in the Pacific territory that has created a new interest in other domestic markets and also foreign markets.

Additional pulp tonnage in Washington in the past year, available for the open market, does not total a

great figure. The new mill of the Rainier Pulp & Paper Co., at Shelton, Wash., added 135 daily tons of bleached sulphite to the market, while expansion of the Fidalgo Pulp Mfg. Co., and completion of the San Juan Pulp Mfg. Co., added about 65 tons of unbleached sulphite. The bulk of this product is going to paper mills in the Atlantic or Middle West states. The Occident Pulp & Paper Mills, at Edmonds, Wash., began operation of a small groundwood mill in 1927.

In the field of tissues a new supply became available with the beginning of operations at the Pacific Coast Paper Mills, at Bellingham, Wash. This mill is an outgrowth of the Westminster Paper Mills Ltd., in British Columbia. The international boundary, with its attendant customs and duties, had much to do with bringing the manufacture of this grade of paper to the American side of the boundary.

East Comes West

Prospects for more construction in Washington during 1928 are unusually bright, but it is well to repeat a previous part of this article that "no project is assured until completed." Washington had in sight at the close of the year several projects. Chief of these was the Union Bag & Paper Power Corp., a subsidiary company of the Union Bag & Paper Corporation which has widespread interests in the East. This company began actual construction of a 120-ton sulphate pulp mill at Tacoma on January 1, 1928. It is hoped to have the plant in operation in about ten months. Unusual importance attaches to this project because it represents Eastern capital moving into the Pacific Coast field.

Aside from the Union Bag mill Tacoma has in prospect a 50-ton sulphite mill to be erected by the Shaffer Box Co., an organization which now operates a large box lumber mill, cutting hemlock almost entirely. Actual construction on this mill has been announced for early in 1928. Tacoma has still another 50-ton sulphite mill in prospect in the Northwestern Pulp & Paper Co.

Other Washington Projects

Other cities in Washington also showed some possibility of pulp and paper development. At Bellingham, early in 1927, the Bloedel-Donovan Lumber Mills announced that it proposed the construction of a 110-ton pulp and paper mill using the soda process. The project was to represent an investment of about $5,000,000 and was to be a combination development of existing extensive lumber mills and the pulp and paper mill. The Bloedel-Donovan interests are classed among the larger lumber operators and they are well fortified with timber both on the Cascade slopes and on the Olympic peninsula.

The Willapa Harbor district in Southwestern Washington, center of one of the heaviest timbered sections, has been looked upon with favor, and the Willapa Pulp & Paper Mills, incorporated in 1927, are now planning to build a 50-ton sulphate mill in that region. Other projects are on foot for this region also.

The Grays Harbor region, where one big pulp mill is already semi-completed, has been very much aroused over pulp and paper in the past few years. In addition to the now-building Grays Harbor Pulp Company's mill, two other projects are showing on the surface. One is the Pacific States Pulp & Paper Co., which incorporated early in 1927 and proposes to build a 100-ton sulphite mill near Aberdeen. This company has already contracted for water from the city of Aberdeen's industrial supply and has purchased a 30-acre site. At Junction City, a small suburb of Aberdeen, the defunct West Lumber Co. was reorganized in the fall of the year and the West Lumber & Pulp Co. was formed. Coincidental with the reorganization announcement it was stated that a 100-ton sulphite pulp mill would be erected on the site occupied by the lumber mill. A dredge was put to work soon after and the site was filled in to a height well above the highest tide mark ever recorded. No further construction toward the pulp mill had actually been made at the close of the year, however. This mill is one of two being engineered by B. T. McBain, of Portland, and his associates. Other projects have been rumored for the Grays Harbor district, but nothing definite has come to the surface.

Just at the close of the year it was stated at a joint meeting of Aberdeen and Hoquiam business men and city officials that the Zellerbach corporation was ready to build a $6,500,000 paper mill in Grays Harbor providing adequate industrial water at low rates was available, but no confirmation of this proposed expansion was given by the Zellerbach central office. It is known, however, that Grays Harbor has been looked upon favorably by both East and West. The Crown-Willamette Paper Co. made some preliminary negotiations in that field a few years ago, but abandoned that region for the time being to concentrate on the Campbell River project in British Columbia. Several large paper mills have had representatives out from the East to look over Grays Harbor, but what the ultimate outcome of their investigations will be has not been stated.

New Oregon Mill

Seattle also has prospects of a mill for 1928 to cost about $2,500,000. The Tom G. Taylor Co., which has financed other Pacific Northwestern mills in the past two years, made a preliminary announcement in December, 1927, that it had the mill under consideration. A water application was filed with the state supervisor of hydraulics and a site fronting the Duwamish River was purchased. The site is immediately outside the southern city limits of Seattle.

Kelso, which adjoins Longview, also has in prospect a small paper mill in the Kelso Paper Co., which has announced plans for the building of a tissue mill of about 15 tons daily capacity.

In Oregon interest centered in several places. One new mill was added to the Pacific Coast roll in 1927, the Spaulding Pulp & Paper Co. at Newberg. This is a 50-ton sulphite pulp mill, a new enterprise fostered by Charles K. Spaulding, a pioneer Oregon lumberman. The mill was financed by sales of stock and has more than 400 stockholders interested in it, many of them from Portland and the vicinity of Newberg.

Hawley Spending $1,500,000

At Oregon City, where the falls in the Willamette River have formed the nucleus for the largest present pulp and paper center on the Pacific Coast, the Hawley Pulp & Paper Co. was rushing a $1,500,000 improvement program at the close of the year, hoping to have their new 234-inch newsprint machine in operation by March, 1928. At Salem, the Oregon Pulp & Paper Co. carried on an extensive program during 1927 which included the installation of a new machine and more digesters. The program had not been entirely completed at the close of 1927.

Much interest attached during the year to Astoria, at the foot of the Columbia river. The Northwestern Pulp & Paper Co. has announced its intention to build a 120-ton sulphite pulp mill there. No actual construction had been undertaken when the new year dawned, but the principals were still actively engaged with the project. The proposed Astoria mill, fostered by B. T. McBain of Portland, has often been confused with the Northwestern Pulp & Paper Co., at Tacoma, Wash., but there is no connection whatever between the two.

The Coos Bay region in Oregon has also been looked upon with favor and some strong rumors of pending pulp and paper development in that area were current during the year, although no definite announcements for proposed construction in that territory have been made.

Unusual interest has centered about St. Helens, Ore. In the last week of December, 1926, the St. Helens Pulp & Paper Co. completed a 60-ton kraft pulp and paper mill and began production. This mill is headed by Mr. W. P. Hawley of the Hawley Pulp & Paper Co., but also numbers a great many other investors among its stockholders. This mill is said to have enjoyed an unusually good first year and has already gained a name for quality product under the capable management of Max Oberdorfer.

In November, 1927, the American Pulp & Paper Co. incorporated in Oregon for $3,000,000, and made a preliminary announcement that it proposed the construction of a 100-ton sulphate pulp mill, with the probable later addition of a paper mill. This enterprise is headed by H. F. McCormick of St. Helens, chairman of the board of the St. Helens Pulp & Paper Co. and prominent in lumber circles. The bulk of the capital for this enterprise is coming from one of the older paper manufacturing centers of the Middle West.

In addition to the American Pulp & Paper Co., there was a strong rumor afloat that the St. Helens Pulp & Paper Co. would add another machine and also that an Eastern bag factory would tie in with the mill. Still a third enterprise was under foot at St. Helens as the year closed, an Eastern paper interest seeking a location in the West, but nothing definite had been made public. Everything considered, the community of St. Helens has been thoroughly aroused on pulp and paper possibilities and genuine progress was generally conceded to be in store for this Columbia River city.

California, less fortunately situated than the country to the North in point of pulp timber which is tributary to tide water, had no actual recent development except for the California Fruit Wrapping Mills, Inc., at Pomona, a 9-ton mill which manufactures fruit wrap for the citrus fruit growers. Two projects were an-

ADDITIONS TO PACIFIC COAST PULP AND PAPER INDUSTRY

New mills completed and important expansions made to existing mills in 1927 or late 1926.

Name	Location	Amount	Remarks
BRITISH COLUMBIA			
B. C. Pulp & Paper Co., Ltd.	Woodfibre	$ 300,000	Expended on both plants.
B. C. Pulp & Paper Co., Ltd.	Port Alice	.....	
Powell River Co., Ltd.[1]	Powell River	8,000,000	Two newsprint machines, added groundwood and sulphite capacity, hydro-electric improvements.
Sidney Roofing & Paper Co.	Victoria	100,000	Added groundwood mill and other improvements.
WASHINGTON			
Cascade Paper Co.	West Tacoma	500,000	New machine.
Columbia River Paper Mills	Vancouver	600,000	New machine and new digester.
Everett Pulp & Paper Co.	Everett	1,000,000	New machine.
Fidalgo Pulp Mfg. Co.	Anacortes	100,000	New digester.
Longview Fibre Co.	Longview	3,000,000	New 100-ton Kraft mill.
Occident Pulp & Paper Co.	Edmonds	200,000	New groundwood mill.
Pacific Coast Paper Mills	Bellingham	175,000	New tissue mill.
Rainier Pulp & Paper Co.	Shelton	3,000,000	New 135-ton bleached sulphite mill.
San Juan Pulp Mfg. Co.[2]	Bellingham	500,000	New 50-ton sulphite mill.
Tumwater Paper Mills	Tumwater	800,000	New 40-ton paper mill.
Washington Pulp & Paper Corp.	Port Angeles	4,000,000	New newsprint machine, increased groundwood capacity, power development.
CALIFORNIA			
Calif. Fruit Wrapping Mills, Inc.[3]	Pomona	525,000	New fruit wrap mill.
OREGON			
Oregon Pulp & Paper Co.	Salem	1,000,000	New machine, 3 new digesters, other improvements.
St. Helens Pulp & Paper Co.[4]	St. Helens	2,500,000	New 60-ton Kraft paper mill.
Spaulding Pulp & Paper Co.	Newberg	700,000	New 50-ton sulphite mill.
Total of completed Pacific Coast expansion		$27,000,000	

New Mills Under Construction or Expansion Programs Not Completed on Jan. 1, 1928

Hawley Pulp & Paper Co.	Oregon City, Ore.	$ 1,500,000	New newsprint machine, new groundwood mill, other improvements.
National Paper Products Co.	Pt. Townsend, Wn.	3,000,000	100-ton sulphate mill under construction.
Grays Harbor Pulp Co.	Hoquiam, Wn.	3,000,000	150-ton sulphite pulp mill under construction.
Union Bag & Paper Power Corp.	Tacoma, Wn.	2,200,000	120-ton sulphate pulp mill under construction.
Construction not complete Jan. 1, 1928		$ 9,700,000	
Completed construction		27,000,000	
Grand total		$36,700,000	

[1]Completed expansion program October, 1926.
[2]Began production October, 1926.
[3]Began production November, 1926.
[4]Began production December, 1926.
Figures shown under "Amount" column represent approximate expenditure in building new mill or in expanding existing mill.

nounced during 1927, however, and two separate companies incorporated. Both of these companies planned their development in Sacramento. One of these, the Sacramento Pulp & Paper Co., announced that it was planning to build a 25-ton pulp and paper mill which would use grape vines for raw material. A new process for utilization of grape cuttings is claimed to have been perfected. Sacramento is in the heart of an immense grape growing country. No further development beyond the incorporation filings was announced on either of these companies at the close of the year.

Up until 1927 the Pacific Coast had produced no coated paper. Two efforts in that respect were made during the last year. One of these, in British Columbia, endured for a few months and then closed down. The other coating mill was installed at the Schmidt Lithograph Co., in San Francisco. This company does a large label business, and began coated paper manufacture principally for its own use. A trial coating machine was followed soon after by a second installation of the same kind, giving the plant a capacity of 18 tons per day.

Community Activity

A recapitulation of added or prospective tonnage, alone, to which this article has largely confined itself up to this point, does not convey a complete picture of the Pacific Coast. The increased interest in development of timber resources for pulp and paper has resulted in many things, good and bad.

Whole communities have warmed up to pulp and paper, whereas they had given it little or no thought before. Columns of space have been devoted to the industry in the daily and weekly press. An undue interest, perhaps, has been aroused in the waste which is an economic attendant of the Pacific Coast's extensive lumber operations. Among the uninformed the idea has grown that any and all waste is suitable for the manufacture of pulp and in many instances the fact that sound wood is necessary for pulp manufacture has been entirely ignored. Speculation has developed in this field and some promoters have attempted to tie up supplies of mill waste, believing they could force the hand of the pulp manufacturers. This type of speculation has brought its measure of tragedy and comedy, but has served to develop a real appreciation of substantial principles on which a pulp and paper manufacturing enterprise must be founded. A similar type of speculation has been evidenced in sites, water rights and other necessaries. The promotional element has not been absent in financial circles. Talk has been plentiful, but frequently not of quality, and not necessarily cheap.

Industrial Water

With respect to community interest there are some more solid aspects. Grays Harbor is a specific example. There the citizens of Aberdeen bonded themselves for $1,600,000 to build an industrial water system which would provide the city's prospective pulp industries with 60,000,000 gallons of water daily. The bonds were voted before a definite customer had signed for water and some interesting political angles developed in connection with the issue. Hoquiam—the other Grays Harbor twin—filed on water during 1927. Port Townsend, Wash., a boom town in the "80's" and in the dumps ever since, sprang to life when it had a chance to get the kraft mill now building there by the National Paper Products Co. The citizens agreed to furnish the water and on a preliminary petition to the paper interests, virtually a 99.44 per cent representation was recorded. When the bonds came up for formal approval of the Port Townsend voters there were 879 votes cast for the $800,000 industrial water bond issue, and 5 votes were cast against it. The City of Port Angeles filed on additional water during the year to insure its future industrial supply. Anacortes improved its water supply and the City of Bellingham studied its resources with an eye to increasing its water. Tacoma, where three new mills were announced, filed on additional water and proposes to spend about $2,000,000 in developing industrial water. In addition to the surface water development the city drilled a well to determine the feasibility of getting adequate water supplies underground. Other community interest was manifested in concessions offered by communities in free sites, low water rates and other things of value to induce mills to settle a payroll within their borders.

Better Equipment Service

With pulp and paper tonnage increasing on the Pacific Coast, there has been a great acceleration of interest among the equipment manufacturers and supply men. This interest has brought its measure of benefit to the West with attendant payrolls. Perhaps of leading interest in this auxiliary development is the announcement that two companies plan to build electrochemical plants in Tacoma for the manufacture of liquid chlorine and caustic soda for the pulp industry. One of these represents the expansion of a Pacific Coast company, while the other represents the introduction of Eastern capital with a branch to serve the West.

With the equipment manufacturers there has been a noticeable trend to get better representation on the Pacific slope. Some Eastern companies have affiliated with Pacific Coast machinery plants for the purpose of having their lines manufactured on the Coast. Others contemplate establishing branch factories in the West. A great many have found Pacific Coast representation with their own branch offices or by getting sales and service representation with Pacific Coast agents. In addition there has been a noticeable inclination on the part of Pacific Coast manufacturers of machinery lines to turn their attention to the manufacture of equipment demanded by the pulp and paper industry. This increase of interest in the equipment and supply line has not only served to sharpen competition in the lines but has brought service and stocks closer to the Pacific Coast mills.

Conservation

Development in pulp and paper has served to turn attention to other natural resources, such as deposits of lime rock, talc, clay and minerals used in the industry.

Pollution problems developing with new pulp and paper mills have caused health departments to turn their attention to the new industry. A majority of the Pacific Coast mills are on tide water and the pollution problem is therefore minimized, but in at least one instance the health department, working with the fishing industry, has caused an extensive survey of pollution to be made as it has been deemed wise to give every protection to an industry which is so highly developed and well established as is the fishing industry on the Pacific.

Reforestation and wood conservation are also claiming more attention. The Crown Willamette Paper Co.

has recently embarked on an extensive reforestation program that is intended to insure the company of a perpetual wood supply. This company has also made experiments in salvaging suitable pulp wood left in the wake of high lead loggers. This step is apparently still somewhat too advanced to be economic, but it is pointing the path which will be followed when competition for wood tends to scale prices upward. In this same connection there is a decided trend in recent years to secure more equitable timber taxation laws which will not force suicidal cutting of timber to glut an unprofitable lumber market. Also to be classed under the general head of conservation is the tendency toward integration of the wood-using industries on the Pacific Coast. This tendency is seen in its first stages perhaps in the practice of the pulp mills to draw hog fuel, chips and mill waste from the lumber mills. The U. S. Forest Service is carrying on an elaborate study to determine the amount of wood left after the logger has passed. There is also some tendency to establish charcoal and other wood utilization plants to get the most out of the wood.

New Markets

With the market for pulp still largely with the paper mills of the Middle West and the Atlantic states, the pulp mills of the Pacific Coast have given increasing attention to the cost of getting the goods to the market. By rail it costs the Pacific Coast manufacturer about $13 to lay his pulp at the door of a Wisconsin paper mill, while by water with pulp baled at a density not greater than 51 cubic feet per ton, it costs $8 per ton to land that pulp on a New York dock. These figures are felt to be too high, and some agitation for better prices, rail and water, is beginning to be felt.

The subject of baling follows in natural sequence when carriage rates are mentioned. The perfect bale or baling method has not been worked out, although much attention has been given to the subject. Different types of bales are being used as well as different methods, but entire satisfaction with any one of these methods has apparently not been attained. The problem has turned the attention of the equipment manufacturers to lend their aid toward solution.

Some new types of equipment made their first appearance on the Pacific Coast in 1927. Among these were the first rod mill beater, the first Swedish type chippers designed for use on mill waste, chip screens using electric instead of mechanical vibration, the first German-make refiner for working up knots and screenings, concave head barkers for use on Pacific Coast mill waste slabs, and new type pulp balers.

Modern Construction

In referring to equipment it is well to point out that the Pacific Coast mills are for the most part new. Virtually all of the equipment going into them is new in point of manufacture and engineering principle. The latest and most modern type of equipment is the type that has been going into Western installations. In building construction also the average of construction is unusually high in character. Steel and concrete and glass have been used extensively and quite generally the character of construction is much more thorough than the equitable climate of the country would necessitate.

One very significant feature of the Pacific Coast development has been the expansion of capital within the Pacific Coast. Many of the older mills during 1927 or 1926 floated new issues of stocks or bonds and these were financed by Pacific Coast financial institutions. Some of the newer mills have financed with sales of stock directly to the general public. Of the two Eastern enterprises which came west, namely the Longview Fibre Co., and the Union Bag & Paper Power Corp., the former financed entirely within its own group centering about the Thilmany mills in Wisconsin, while the Union Bag interests floated a bond issue which was offered in the Pacific Coast states.

The Pacific Coast is comparatively young in paper making experience. That is, a condition does not obtain here where son, father, and even grandfather have worked along in the same trade or even in the same mill, as is often the case in the East. The recent Pacific Coast development has attracted to the West a number of skilled technical men and also a number of capable executives, not to mention artisans of less calibre.

Eastern Interest

Each man who has brought his talents to the West has added just that much to the pulp and paper industry of the Pacific Coast. This importation of brains results in more than just the transfer of so much ability from East to West. Each man that turns his steps to the Pacific leaves behind him in the East a circle of friends or business associates whose interest in the Pacific Coast is thereby increased by reason of having some tangible connection with it.

Significant of the interest which the East displayed in the Pacific Coast development is the visit of Dr. Hugh P. Baker, at that time secretary of the American Paper & Pulp Association. Dr. Baker spent six weeks in 1927 on the Coast and made a lengthy report to his association. This report was widely circulated. While on the Coast, Dr. Baker spoke before civic groups and made many private contacts with lumbermen, bankers, pulp and paper mill executives.

Effect of Visits

Dr. Baker represented a definite group in the pulp and paper industry, but he was not the only emissary from the East. Another was Royal S. Kellogg, secretary of the News Print Service Bureau. Mr. Kellogg also made many contacts and several addresses. The International Paper Company had representatives on the Coast for many weeks, making first-hand investigations of the activity. In addition there were many others, some of them known, perhaps a greater number unknown. Many of these traveled ostensibly for pleasure, but with a weather eye to conditions.

These visits have had a very definite effect on the Pacific Coast. The very fact that these men, prominent in the pulp and paper industry in the East, should come to the West to study conditions, has been interpreted, and rightfully so, by bankers, lumbermen, industrialists and even communities, that the Pacific Coast holds an unusual measure of interest for the older pulp and paper manufacturing regions. The Pacific Coast communities have warmed up to the idea of pulp and paper, become educated in the subject, and the result has been that communities are in a receptive mood and willing to cooperate with incoming industries to a degree that did not exist before.

Engineers have also turned their attention to the Pacific Coast in the past two or three years and some have come to the West to establish either branch or main offices.

All of this interest displayed in the Pacific Coast development is interpreted by most reliable and unbiased

sources to mean that the increasing consumption of paper coupled with the diminishing wood supply of the older pulp manufacturing regions has reached a stage where the Pacific Coast with its great stands of wood is recognized as the next economic development. This great spurt in interest in the past two years or more has had a double effect. With the established mills it has developed an attitude of disparagement intended to play down the possibilities of the Pacific Coast and keep out new mills, while with the newer elements in the field it has served to foment all kinds of schemes, some of which have been decidedly of a "boom" nature.

Board Merger

In the industries allied with pulp and paper manufacture there have been important developments in the past year. In the paper container field the most significant happening was the merging of the board mills and converting plants of the National Paper Products Co., a Zellerbach subsidiary, and the Paraffine Companies, Inc., to form a new organization known as Fibreboard Products, Inc. The merger put all of the board mills with the exception of one into the hands of one group and consolidated the fibre container and converting plants which both companies had operated independently theretofore. The merged company is reputed to be worth about $18,000,000. Shortly after the consolidation the new company floated a $1,500,000 preferred stock issue.

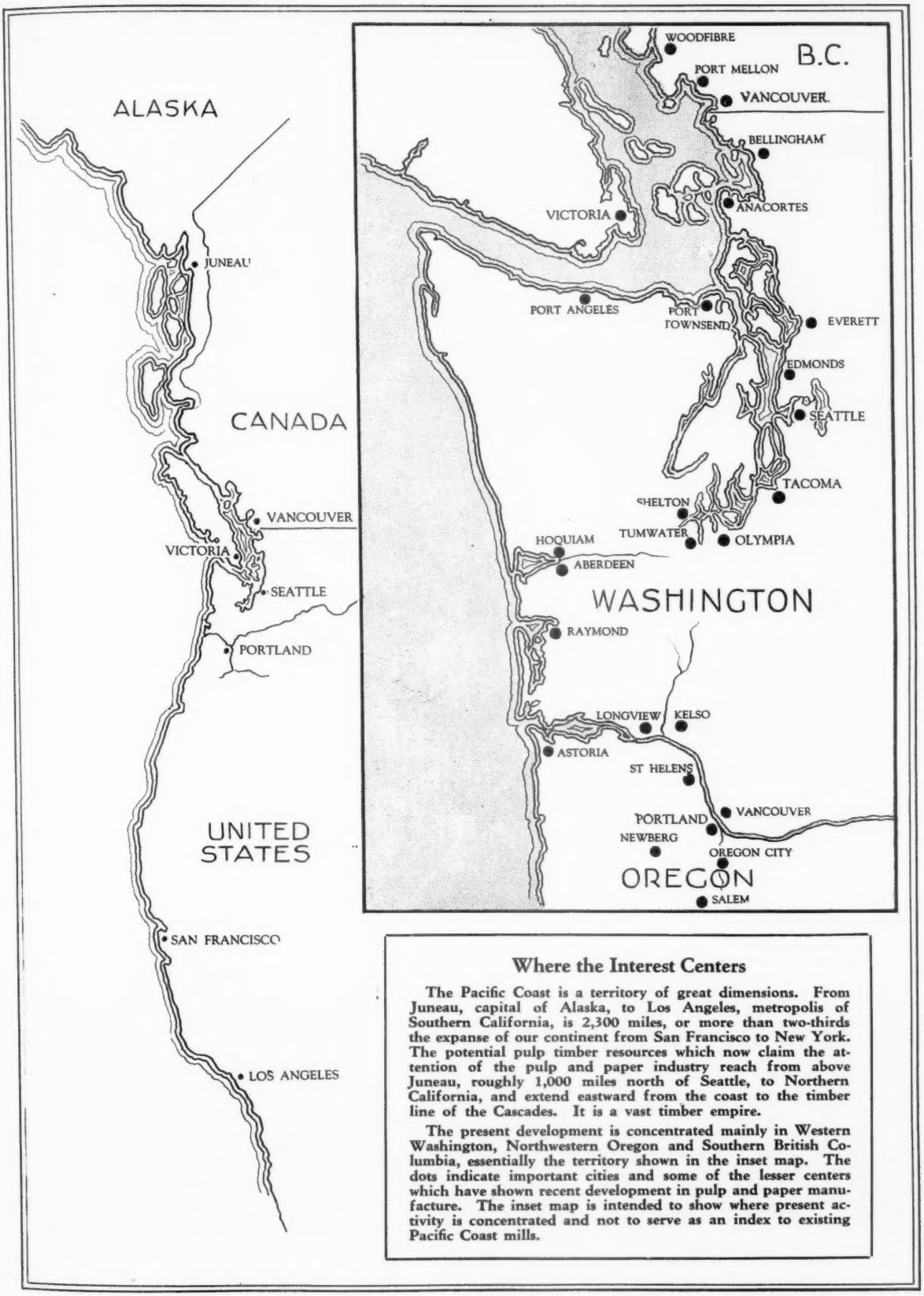
With the independent paper box makers up and down the Coast there was a noticeable increase in cooperation as evidenced at the annual convention of the Pacific Coast Paper Box Makers' Association. This meeting drew an excellent attendance and its effects spread to the different cities of the Coast and resulted in better mutual cooperation among the plants of each city. As a business year 1927 was not very satisfactory for the paper box makers, but a feeling of optimism for the New Year prevailed as December passed into history.

The paper merchants of the Pacific Coast did not have an exceptional year in point of business, but they did adopt two new practices which were significant. The 1,000-sheet count was accepted and some real conscientious effort was made to get the idea into favor with the buyers of paper. These efforts have been crowned with measurable success. The carton pack was also introduced to the Coast and has found a wide acceptance in the trade, but it has also met with some opposition. Increased capacities of Pacific Coast mills have had a bearing on the Pacific Coast jobbers. Sharper competition has driven the mills to greater efforts for representation through the jobbers, and some of the Eastern mills which had their tonnage displaced have resorted to direct-to-consumer selling. The present day situation of the jobber is not altogether pleasant and the prospect is very good that for several years at least the paper trade on the Pacific Coast will not be in a settled condition. Some progress is being made in cost studies and the jobbers are turning their attention to getting more profit out of the business they are doing.

A Pacific Coast Right

The problem of the jobbers points naturally to the situation of the paper industry as a whole, namely, an increasingly keen struggle for markets. A logical interpretation of the accelerated activity on the Pacific Coast as evidenced in the past few years is that the economic time is at hand when the industry must turn to the pulp timber resources of the Pacific. As one man has put it: "The Pacific Coast has the wood and the pulp and paper mills will have to come to it. The world's markets must sooner or later recognize this Pacific Coast production, and the sooner it is done, then just that much sooner will conditions be improved for all of us. Industry doesn't wait until one field is gleaned of the last kernel before it moves on to the next field, but it looks ahead and has new supplies in view before it finishes entirely with its present one. The Pacific Coast is going to be recognized as a definite paper-making region, and with a general recognition of that inescapable fact, will come better freight rates, better marketing conditions, better cooperation between mills, and better business. The mills will not move to the Pacific Coast over night. All of them will never move. But the wood is here, and the right to convert it to pulp and paper belongs to the Pacific Coast."

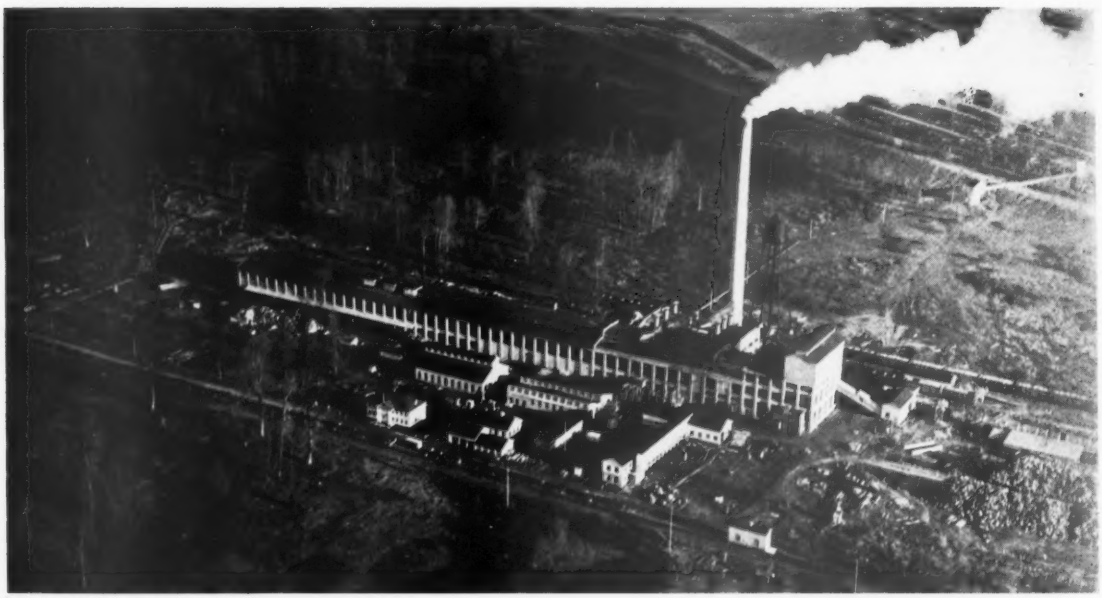
Douglas Fir and Western Hemlock of the Pacific Coast



Where the Interest Centers

The Pacific Coast is a territory of great dimensions. From Juneau, capital of Alaska, to Los Angeles, metropolis of Southern California, is 2,300 miles, or more than two-thirds the expanse of our continent from San Francisco to New York. The potential pulp timber resources which now claim the attention of the pulp and paper industry reach from above Juneau, roughly 1,000 miles north of Seattle, to Northern California, and extend eastward from the coast to the timber line of the Cascades. It is a vast timber empire.

The present development is concentrated mainly in Western Washington, Northwestern Oregon and Southern British Columbia, essentially the territory shown in the inset map. The dots indicate important cities and some of the lesser centers which have shown recent development in pulp and paper manufacture. The inset map is intended to show where present activity is concentrated and not to serve as an index to existing Pacific Coast mills.



Brugaker Aerial Surveys, Portland, Ore.

Longview Fibre Company, Longview, Washington

Longview Pulping Douglas Fir

LONGVIEW FIBRE CO. Longview, Washington	
President	H. L. Wollenberg
Vice-President	D. C. Everest
Secretary	M. T. Ray
Resident Manager	R. S. Wertheimer
Chief Engineer	W. E. Dodge
Designer and Builder	Charles R. Seaborne

THE new $3,000,000 kraft mill of the Longview Fibre Company at Longview, Washington, began production on October 3, 1927, scarcely nine calendar months after first building construction began. The mill has a daily capacity of 100 tons of sulphate pulp and 100 tons of kraft board. It adjoins the huge lumber mill of the Long-Bell Lumber Company, which has a cutting capacity of 1,800,000 board feet per day. The lumber mill cuts Douglas fir almost exclusively and the Longview Fibre mill has a particular interest in this respect because it has been built to pulp exclusively the Douglas fir waste from the lumber mill.

The mill is located at the confluence of the Columbia and Cowlitz rivers. It draws its water from the Cowlitz and discharges into the Columbia some distance below the raw water intake. Deep sea ships can come right to the docks of the port. A rail spur serves the mill from nearby main line railroads.

A unit type building 1000 feet long, housing under one roof the digester room, diffuser room, boiler and recovery room, and combined beater, machine room and storage room, is the plant's main structure. There are four welded stationary digesters, fourteen diffuser tanks arranged in circles of seven each, a causticizing system of the batch type, and a unique recovery process known as the Peebles process.

The steam plant consists of three 837 h.p. Stirling type boilers equipped to burn either hog fuel or oil. In addition each of the three smelters on the recovery system is directly connected with a 570 h.p. boiler. The mill has its own generating room wherein is installed a 2500 k.w. 440-volt turbo-generator. This is tied in parallel with the power house of the Long-Bell mill, which supplies further electric power requirements.

Operations in the machine room have been centralized on the second floor. The principal piece of equipment is a vertical dryer. This is mounted on the lower floor, but the wet end, calendars, reels, drive and all controls are located on the upper floor. On this same level are the screens, beaters, and jordans, all in one room, an arrangement which gives the beater crew control of the stock and eliminates duplication in handling.

The machine, driven by electric sectionalized drive, has a capacity of 100 tons of board daily and is built to operate at speeds up to 250 feet per minute. The drying section consists of 104 dryers 42 inches in diameter with a 145-inch face. There are two calendar stacks.

The machine room is wide enough to take care of another machine and a 35-ton Yankee type 172-inch paper machine is to be installed early in 1928. The mill was designed and constructed under the supervision of Charles A. Seaborne, chief engineer of the Thilmany Pulp & Paper Co. of Kaukauna, Wis. Mr. Seaborne was granted a leave of absence from the Thilmany company to construct the Longview plant.

The Longview Fibre Company marks the entry of eastern pulp and paper capital and talent into the Pacific Coast field. Mr. M. A. Wertheimer, chairman of the Board of the Longview Fibre Co., is president of the Thilmany Pulp & Paper Co., and his son, R. S. Wertheimer, resident manager at Longview, was assistant engineer at Thilmany. D. C. Everest is general manager of the Marathon Paper mills at Rothschild, Wis. Secretary M. T. Ray has been chief accountant at the Thilmany mills for several years.

Brugger Aerial Surveys, Portland, Ore.

St. Helens Pulp & Paper Company, St. Helens, Oregon

St. Helens Making Good Record

St. Helens, Ore.

President	W. P. Hawley, Sr.
Vice-President	Willard P. Hawley, Jr.
Chairman of the Board	H. F. McCormick
General Manager	Max Oberdorfer
Secretary-Treasurer	Irving T. Rau

ALTHOUGH beginning production shortly before Christmas, 1926, the St. Helens Pulp & Paper Company's kraft mill at St. Helens, Oregon, can rightfully be classed in the 1927 development of the pulp and paper industry on the Pacific Coast. This mill is rather an outgrowth of the Hawley Pulp & Paper Co. at Oregon City, Oregon, as Mr. W. P. Hawley, Sr., is president of both companies, and Mr. W. P. Hawley, Jr., is vice-president of both companies. The St. Helens mill, however, is owned by a great number of stockholders who have no connection with the Hawley company.

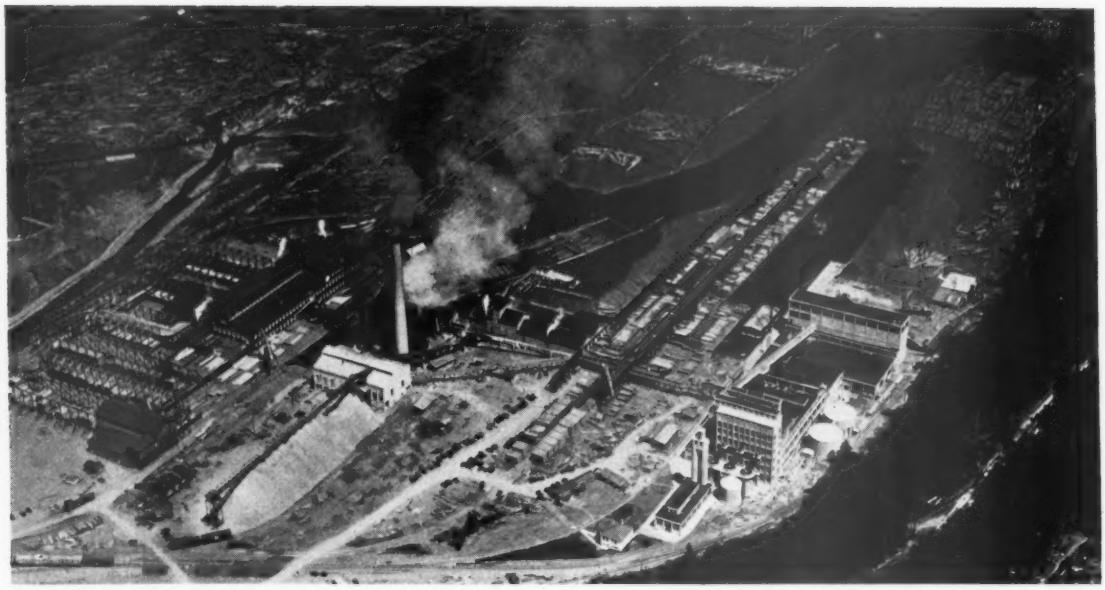
The St. Helens mill is situated on the Columbia River and has its own dock, which can accommodate ocean going traffic. The mill, representing an investment of about $2,500,000, includes a wood room at the river's side, power house, sulphate pulp mill, machine room, and finishing room. The wood room has a log cut-up unit, battery of disc barkers, and chip screens. Both logs and mill waste are used. Chips and hog fuel are carried to the digester house and boiler room respectively by a long belt conveyor. The pulp mill has three rotary digesters and an efficient liquor system. The beater room has ten beaters, Jordans, and the usual complement of screens and washers.

The steam plant has four 500-h.p. boilers and two 1,000-h.p. steam turbines. The boilers are fired with hog fuel but have auxiliary oil burners.

The machine room houses one 168-inch machine designed to turn out kraft wrapping paper at about 700 feet a minute, or a daily capacity of 60 tons. The machine is driven by two 300-h.p. steam turbines with rope drives to convey the power. The finishing room lies immediately beyond the machine room and is equipped with the usual cutters and layboys. The finished rolls and packages can be loaded directly on the cars on a spur at the side of the finishing room.

The buildings are durably constructed of steel and concrete with an abundance of steel sash and the entire mill in design and construction evidences high class modern engineering. The different units have been so laid out that expansion in the future can easily be accomplished.

Under the skillful management of Max Oberdorfer, general manager, the mill has made an exceptionally good record in its first year of operation. Mr. Oberdorfer is a graduate of a German university, thoroughly trained in the pulp and paper field, and has held in his more than twenty years of experience many responsible positions in the industry. It has been his aim throughout the direction of affairs at St. Helens to produce a kraft paper of highest quality. The St. Helens product, all of which is marketed through the Graham Paper Company, has established for itself during the twelve months it has been on the market a respected name for quality. Kraft paper production on the Pacific Coast is not extensive at the present time and therefore Mr. Oberdorfer's efforts in using both Western hemlock and Douglas fir have had about them something of a pioneer and experimental nature. To the town of St. Helens the building of the pulp and paper mill has added new life and the entire community is vitally interested in the mill as a steady payroll and many individuals are financially interested in the enterprise as well.



Brubaker Aerial Surveys, Portland, Ore.

Rainier Pulp & Paper Company, Shelton, Washington

Pulp Mill and Lumber Mills

RAINIER PULP & PAPER CO., Shelton, Wash.	
President	E. M. Mills
Vice-President	J. C. Higgins
Vice-President	J. D. Zellerbach
Secretary-Treasurer	S. Sonnenburg
Asst. Secretary-Treasurer	A. I. Ellis
Resident Manager	Leo S. Burdon
In Charge of Operations	David B. Davies
Designer and Builder	V. D. Simons

THE Rainier Pulp & Paper Co. completed its new mill at Shelton, Washington, and began the production of bleached sulphite pulp in June, 1927, just eleven months after construction first began. This mill has a daily capacity of 135 tons. With the two adjoining lumber mills, one cutting Western hemlock and the other cutting Douglas fir, it represents an interesting economic unit. A central power house serving both lumber mills was enlarged and steam and power from this unit are supplied to the lumber mills and the pulp mill. Hog fuel, derived principally from the waste of these lumber operations, is used to fire the boilers. The hemlock mill is also furnishing a quantity of chips. Much of the wood supply for the pulp mill comes from outlying points in the form of chips, either by rail or by scow to the mill side, but the Rainier mill also has its own wood room for the conversion of logs or other wood to chips.

The mill is located on one of the many bays of Puget Sound. It has its own docks, served by Sound steamers and scows, and rail spurs directly to the mill.

Design and construction of the Rainier plant were under the supervision of V. D. Simons, pulp and paper mill engineer of Chicago, with D. R. Hettelsater serving as resident engineer. The mill consists of a contiguous set of buildings housing digester room, screen and bleach room, machine room, storage room and repair shop, and chip storage room. The acid plant with its sulphur burner room, Jenssen acid towers, and acid storage tanks comprise a separate unit.

A heavy type of modern construction is employed throughout the plant. Concrete and steel are used from one end of the mill to the other, and steel sash is liberally used in all departments, even the digester house being glazed to the top.

All equipment is new and modern. The mill has three digesters, each with a capacity of 22 tons per cook, said to be among the largest in use in sulphite production. There are six stock chests and one for white water. One of the interesting features of the mill is the system of cross connection used in piping between acid system and digesters, digesters and stock pits, and stock pits and screens. This system has been so designed as to give the mill a maximum flexibility in operation.

The pulp is dried on a vertical cylinder dryer which has 80 drying cylinders 42 inches in diameter. The cylinders are mounted five high. The drive is the electric sectionalized type. The machine is designed to dry from 100 to 135 tons of pulp per day.

Pulp is cut in sheets and baled for shipment. Storage features at the mill are ample. Aside from a pulp storage room large enough to house 3,000 tons of finished pulp in bundles, there is a large chip storage house and sulphur storage house. Most of the pulp produced in 1927 was consigned to the Atlantic Coast via water.

The mill represents a notable addition to the bleached sulphite capacity of the Pacific Coast. The plant investment is between $2,500,000 and $3,000,000.

The Rainier Pulp & Paper Co. is organized under the laws of the state of Delaware. More than 50 per cent of the preferred and common stock is held by Isadore Zellerbach, M. R. Higgins, E. M. Mills, J. D. Zellerbach, H. L. Zellerbach, and Mark E. Reed. With the exception of Mr. Reed, all of these men are active officers in the Zellerbach Paper Co.

Tumwater Paper Mills Company, Tumwater, Washington

Tumwater—A New Wrapping Mill

TUMWATER PAPER MILLS CO.,
Tumwater, Wash.

President	T. Osmund
Vice-President	W. H. Trindle
Secretary-Treasurer	Ralph L. Shepherd
Asst. Secretary-Treasurer	W. C. Moore
Superintendent	P. J. Vernig
Designer and Builder	L. A. DeGuere

FROM beer to paper, in brief, is the history of the Tumwater Paper Mills Co. at Tumwater, Washington. It is one of the interesting developments on the Pacific Coast because the buildings of a former brewery have been converted and added to by clever engineering adaptation to make a paper mill. The Tumwater Paper Mills, as it began production of sulphite wrapping paper in October, 1927, had one 134-inch paper machine, a 20-ton ground wood mill, boiler house, screen room and finishing room. The machine room is large enough for a second machine, and additional screen capacities can be installed with little change in the present structure.

The brew house, which is at present unused, will be utilized in the future as a digester house when, according to present plans, a sulphite mill is added later. The building lends itself remarkably well to the installation of six digesters.

In building the mill, the original brewery buildings were utilized as much as possible. By connecting two sets of buildings with a new structure, a commodious machine room has been provided. Plans provide for final installation of four paper machines, a sulphite mill and enlarged groundwood plant.

The mill is located on tide water at the mouth of the Deschutes River, adjoining Olympia, Washington's capital city. It has its own docks with gridirons built in to accommodate scows which bring in hog fuel, pulp wood or supplies. A railway spur runs directly to the plant and trucks can also come to the mill from a state highway less than half a mile distant.

Perhaps the outstanding feature of the Tumwater mill is the water supply. It has virtually an unlimited surface water supply from the Deschutes river, but this supply will be drawn on only in the event of emergency. The main supply of water is obtained from a well 104 feet deep. This will deliver water at a low head without pumping, but with a 50 h.p. motor installed driving a deep well pump, the mill has a 2,000,000 gallon daily supply of underground water of an excellent quality. The water cost is estimated at less than $4.50 per million gallons.

The Tumwater mill was designed and built by Mr. L. A. DeGuere of Wisconsin Rapids, Wis. The Tom G. Taylor Co. handled the financing. The capital stock amounts to $1,250,000 of which about $800,000 is represented in the building of the mill.

The officers of the Tumwater Mills Co. have been identified with the paper business on the Pacific Coast for many years. President Osmund was formerly with the Crown Willamette Paper Co. and later was secretary-treasurer of the Hawley Pulp & Paper Co. for fourteen years. Mr. Shepherd had charge of the traffic department of the Hawley Pulp & Paper Co. for nine years before joining the Tumwater company. Mr. Moore was formerly assistant accountant at the Hawley mill and before joining Tumwater was chief accountant at the St. Helens Pulp & Paper Co. Mr. Vernig was formerly with the Crown Willamette Paper Co., Everett Pulp & Paper Co. and the Hawley Pulp & Paper Co.

Brubaker Aerial Surveys, Portland, Ore.

Spaulding Pulp & Paper Company, Newberg, Oregon

Oregon's Newest Sulphite Mill

SPAULDING PULP & PAPER CO.,
Newberg, Ore.

President	Charles K. Spaulding
Vice-President	J. C. Compton
Secretary	Clarence Butt
Treasurer	Lynn B. Ferguson
Superintendent	Ernest Schweitz

THE Spaulding Pulp and Paper Co., at Newberg, which began production in November, 1927, is Oregon's only new mill for 1927. It is a two-digester mill with a daily capacity of 50 tons of unbleached sulphite.

The leading figure behind the spaulding mill is Charles K. Spaulding, a prominent lumberman of the lower Columbia and Willamette valleys. He has been supplying pulp wood to other pulp and paper mills in Oregon for many years and is also an extensive timber operator.

The pulp mill is located on the banks of the Willamette River, on a site adjoining a lumber mill operated by Mr. Spaulding. The lumber mill is supplying hog fuel with a conveyor system leading directly to the boiler house at the pulp mill.

The pulp mill has a 120-ton Jenssen acid tower system with the usual installation of sulphur burner and lead cooling coils. Acid storage tanks and the blow pits are constructed of wood, the latter being reinforced with concrete buttresses. The main mill building consists of two parts, the screen room and a drying room. Two Fidalgo system pulp dryers and shredders are installed on the second floor of the drying room. The first floor is used for baling, pulp storage and machine shop.

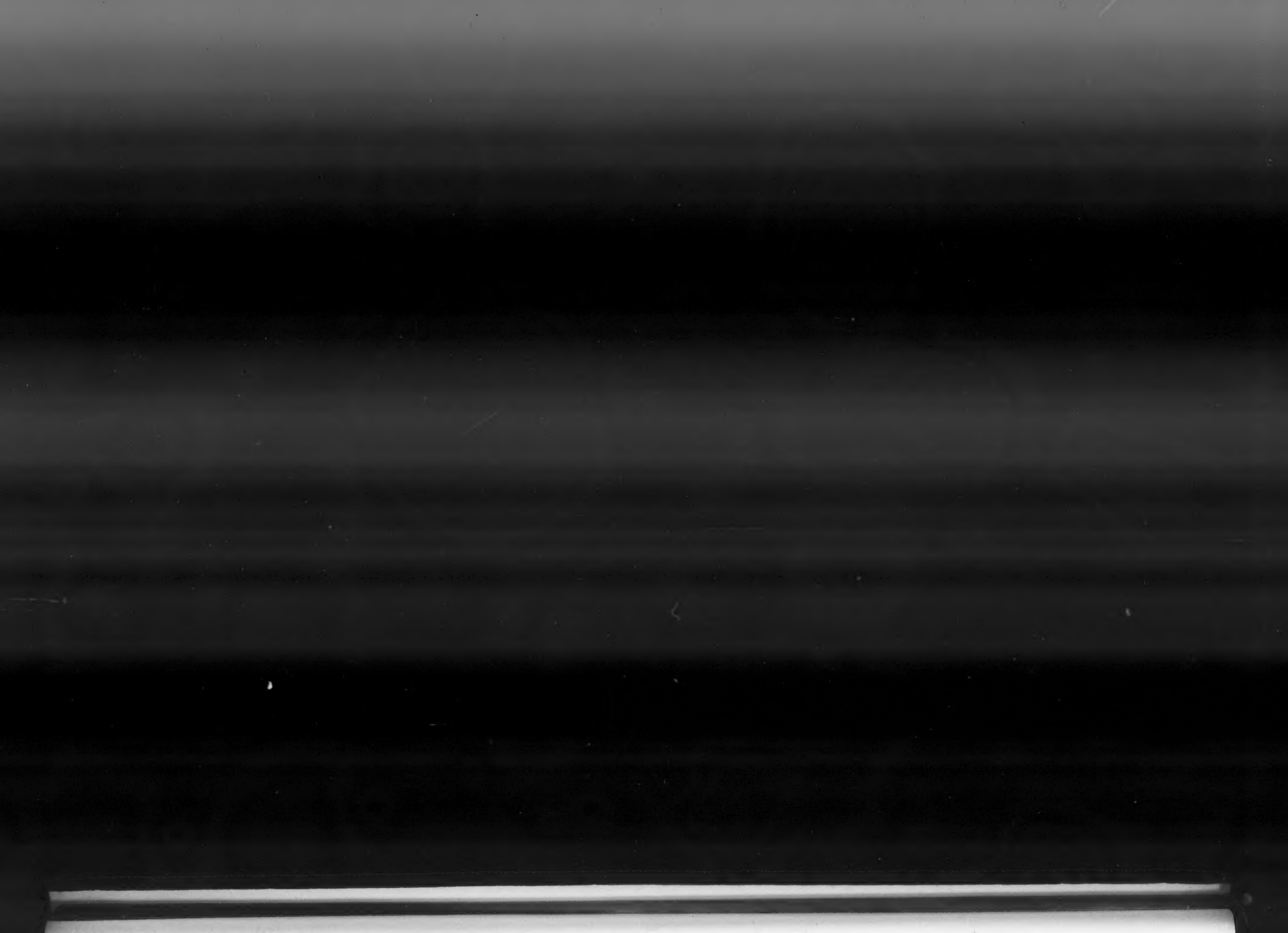
The wood room is housed in a separate building and has been built large enough to accommodate a log cut-up unit. At present, however, the Spaulding mill is using white fir in the form of peeled cord wood. The cord wood comes directly to the wood room by rail or by truck. Wood room equipment includes four 60-inch disc barkers, an 88-inch chip breaker, and a shaker type chip screen.

Construction of the different building units varies, the purpose being to achieve durability with minimum expense. The boiler house is of steel construction throughout. The wood room is frame construction, and the sulphur burner room and cooling room are concrete and steel. The digester house is of heavy timber construction with concrete footings. The screen room is concrete in the lower portion, including the screen room floor. Much of the remainder of the screen room and drying room is of wood construction.

The mill draws its water from the Willamette River, through two deep well pumps, located at the river, and a ten-tank filter system, which has a capacity of 5,000,000 gallons per day.

The entire mill has been so constructed that it permits ready expansion along the present lines to an ultimate capacity of 170 tons of pulp and paper daily. President Spaulding states that the pulp mill is only the first step and that a paper mill will be built as soon as that step proves economically feasible.

The Spaulding Pulp & Paper Co. has an authorized capital stock of $1,200,000. More than 400 stockholders are interested in the company, most of these people being residents of the state of Oregon. The mill, as completed, at the time of first operation, represented an investment of about $600,000. Mr. Ernest Schweitz, general superintendent, supervised construction of the Spaulding mill.



Supplement to Pacific Pulp & Paper Industry

LAWRENCE KILLAM

President British Columbia Pulp & Paper Co., Ltd.

Powell River Company, Ltd., Powell River, B. C.

Powell River Spends Millions

POWELL RIVER CO., Ltd.,
Powell River, B. C.

President	D. F. Brooks
Vice-President	M. J. Scanlon
Executive Vice-President	S. D. Brooks
Secretary	P. A. Brooks
Treasurer	A. S. Brooks
General Manager	A. E. McMaster
Mill Manager	R. Bell-Irving

THE largest single unit of the pulp and paper industry on the Pacific Coast is at Powell River, B. C., where the Powell River Co., Ltd., produces 450 or more tons of newsprint daily.

Construction of the Powell River mill began first in 1910 and first shipments of paper were made in 1912. In October, 1926, an extensive improvement program was completed, bringing the capacity of the mill up to about 500 tons daily and making the total investment in plant about $20,000,000.

The improvement program included the installation of two new 234-inch newsprint machines, extensive additions to the ground wood pulp and sulphite pulp mills, further hydro-electric and steam development, and a new saw mill and log cut-up unit.

The mill is situated on tide water at the lower end of Powell Lake, a snow-fed body of water 30 miles long. A dam at the lower end of the lake, less than half a mile from the sea, provides a normal head of 166 feet. The recent hydro-electric developments include improvements in the dam, additional penstocks, and a new hydro-electrical vertical shaft turbine with a rated capacity of 13,500 h.p. Extensive alterations were also made in the existing generating rooms.

Twenty-four new grinders were added to the ground-wood pulp department. These are mounted in a double line, a single hydraulic turbine of 6,150 h.p. driving each line. The pulp stones are 54 inches in diameter and 36 inches in width.

New digesters were added in the sulphite department and additional screen capacity was added to take care of the extra pulp capacity in both sulphite and ground-wood pulp departments. A new beater room, so-called, but with no beater installations, was also added, two new filters and two new Jordans doing the work in this division.

There are now three machine rooms. A new machine room to house the two new 234-inch machines was constructed. This building is excellently designed, of steel and concrete construction and built with proportions that in no way crowd the operation of the two monster machines. The older machines are belt driven, but the new machines are equipped with electric sectionalized drive.

The Powell River mill operates entirely on logs. To take care of the increased capacity a new break-down saw mill with a 16-hour capacity of 500,000 board feet was constructed. Additions were also made in the wood room.

Some $900,000 was expended in improving the steam plant alone. A new stack was added, and the original installation of 3,000 boiler h.p. was practically duplicated. Hog fuel is the principal fuel, but oil is also used extensively and improvements here included new storage tanks for fuel oil.

The entire improvement program involved practically a round $8,000,000. Of more credit to the organization is the fact that the entire program was virtually carried out, design and construction, by the Powell River Company's own engineers.

The company lays great stress on organization. It has a department which is devoted to townsite and the welfare of its community of employees. There is a very noticeable esprit de corps in the organization, from president to humblest employee.

Brubaker Aerial Surveys, Portland, Ore.

Hawley Pulp & Paper Company, Oregon City, Oregon

Hawley Co. Spending $1,500,000

HAWLEY PULP & PAPER CO., Oregon City, Ore.	
President	W. P. Hawley, Sr.
Vice-President and Gen. Mgr.	Willard P. Hawley, Jr.
Secretary-Treasurer	E. A. Chapman
Asst. Secretary-Treasurer	Robert W. Peters
Superintendent	George Pusey

AT Oregon City, Ore., the Hawley Pulp & Paper Co. began, in May, 1927, an improvement program which will involve an initial expenditure of $1,500,000. Work began in earnest soon after the first announcement and has been pushed with large crews at all time. At the close of the year, the outlook was good for initial operation of all new units in March, 1928.

The greatest single improvement in the Hawley program is the installation of a 234-inch newsprint machine. This machine will have a capacity of 120 tons of newsprint daily when in full production. The machine incorporates all the latest features of design and has been built to operate at speeds up to 1,500 feet per minute. The drive is the sectionalized electric type.

To make room for the big new machine the original machine room has been remodeled extensively and brought up to date in design with concrete and steel construction. The No. 4 machine, which is 165 inches wide, was operating in this area as late as October 10, 1927. Arrival of parts for the new machine and progress on the mill alterations then turned attentoin to the erection of the new machine. The older machine was dismantled and stored and the new unit put up in its place. Progress has been very rapid, considering the many handicaps that the engineers have had to contend with. The enlarged machine room is 222x38 feet.

A new concrete finishing room with a two story extension to the original warehouse was added to take care of the mill's increased capacity. An auxiliary warehouse has also been constructed in Portland to facilitate deliveries.

Other improvements made in the paper mill included remodeling of the No. 1 machine and the installation of a new drying system with a resultant added capacity of 10 tons of paper daily.

A large new groundwood pulp mill was completed several months prior to the final installation of the new paper machine. The new unit gives the Hawley mill a daily capacity of 150 tons of mechanical pulp. A new steel and concrete building 66x144 feet, and three stories in height in some parts, was erected to house this new unit. The equipment includes five new electrically driven three-pocket grinders.

Improvements were made to the existing sulphite mill and daily capacity was increased by 15 tons to make a total daily capacity of 85 tons. The paper mill will have a daily capacity of 120 tons of news print and 80 tons of wrapping paper when completed.

The power plant was enlarged to care for the increased capacity of the mill. Two old units of the boiler room were removed and a new 546 h. p. Stirling type boiler was installed.

Other improvements included extensive refitting of the company's offices and general betterments throughout the mill. The 1927-28 improvement program is understood to be a part of an improvement program which will extend over a period of years.

The Hawley mill is largely the outgrowth of the personal efforts of W. P. Hawley, Sr. The mill occupies a narrow strip on the bank at the Willamette River falls at Oregon City. With the 330-ton newsprint mill of the Crown Willamette Paper Co., operating immediately across the river this locality comprises the largest single pulp and paper community on the Pacific Coast.

Brubaker Aerial Surveys, Portland, Ore.

Washington Pulp & Paper Corporation, Port Angeles, Washington

Big Improvement at Port Angeles

WASHINGTON PULP & PAPER CORPORATION,
Port Angeles, Wash.

President	M. R. Higgins
Vice-President	Isadore Zellerbach
Vice-President	E. M. Mills
Secretary	J. D. Zellerbach
Treasurer	S. Sonnenberg
Resident Manager	Norman B. Gibbs

THE Washington Pulp & Paper Corporation at Port Angeles, Washington, began the operation of a new 234-inch newsprint machine in May, 1927. Beginning of production on this new machine virtually completed an extensive program of improvement which had begun the previous year.

Aside from the new machine, extensive improvements were made in hydro-electric development. The power development is organized as a separate company, the Northwestern Power & Light Co. The recent additions in this field include a new dam in Glines Canyon on the Elwha river, and a generating station which develops an additional 16,500 h.p.

The mill itself has a large steam installation and improvements in this department made in connection with the latest improvement program included the installation of a new 1,000 h.p. Stirling type boiler.

Improvements made to the pulp and paper mill proper, aside from the addition of the new machine, include a new grinder room, additions to the screen room, new finishing room and improvement in the sulphite plant. A thoroughly modern type of steel and concrete construction is employed throughout the Port Angeles mill, both in the original and new units. The additional structures added in 1926 and 1927 are extensions of the original buildings, so that the main unit of the mill today is one large building housing grinder rooms, screen rooms, beater room, machine room, and finishing room.

The new grinder room is equipped with six new 54x54-inch three-pocket grinders, each driven by a 1,000 h.p. electric motor. The monorail system delivering racked cordwood to the grinders was extended to connect up with the old grinder room and the wood room and stock piles.

Considerable additions to screen capacity were made in a new screen room installed in between the old and the new grinder rooms. This section of the building is built to a height of three stories. No additions were made in the beater room.

What had been the exterior wall of the old machine room, which houses the Nos. 1 and 2 machines, was torn out upon completion of the new machine room, so that now all machine operations are in one large room. The new machine is thoroughly modern. It has a removable type fourdrinier and electric sectionalized drive. Two new Jordans and additional filters and screens were installed with the new machine.

The finishing room was considerably enlarged in the extension program. The new machine boosts the newsprint capacity of the Washington Pulp & Paper Corporation from 145 to 270 tons a day.

The Port Angeles mill is interesting from another aspect. The first unit, built in 1920, is said to be the only new newsprint mill built in the United States in the last decade. Addition of another machine to this mill, therefore, is of more than passing interest. An estimated $3,000,000 was expended in improvements at Port Angeles.

Mr. V. D. Simons, pulp and paper mill engineer of Chicago, was the consulting engineer for the Port Angeles construction.

Oregon Pulp & Paper Company, Salem, Oregon

Extensive Improvements at Salem

OREGON PULP & PAPER CO., Salem, Ore.	
President	F. W. Leadbetter
Vice-President	B. L. Steeves
Secretary	A. S. Fleming
Treasurer	Wm. S. Walton
General Superintendent	P. J. Lamoureux

AT Salem, Oregon, the Oregon Pulp & Paper Company, is one of three mills operated by the Leadbetter interests. F. W. Leadbetter is president of this company as well as president of the Columbia River Paper Mills at Vancouver, Washington, and the California-Oregon Paper Mills at Los Angeles, California. The Oregon Pulp & Paper Company is the only mill on the coast making a specialty line of papers. It manufactures sulphite bonds, glassine, greaseproof, and similar types. Improvements completed during 1927 represent the expenditure of close to one million dollars. The plant was remodeled extensively, a new paper machine added, and two new digesters were installed. At the close of the year work was progressing on the installation of another new digester.

The remodeled mill bears little interior resemblance to the mill which existed before the improvement program began. In the previous arrangement the machines were on the second and third floors but to provide room for the installation of the new machine added in 1927 one of the older machines was moved from the second floor to the street level and one machine was moved from the third floor to the street level. With the present arrangement there are three machines on the first floor and one machine on the third floor. This latter machine is employed in the making of glassine and greaseproof. Three of the machines are equipped with fourdriniers while the fourth machine is a cylinder type. This machine is to be rebuilt with fourdrinier.

For the making of glassine considerable super calendar equipment is necessary of course and additions were made in this department to take care of the increased capacity of the machine room. In addition to these major factors in the mill improvement program a general remodeling for increased efficiency was carried out throughout the entire mill. Some new buildings were added also.

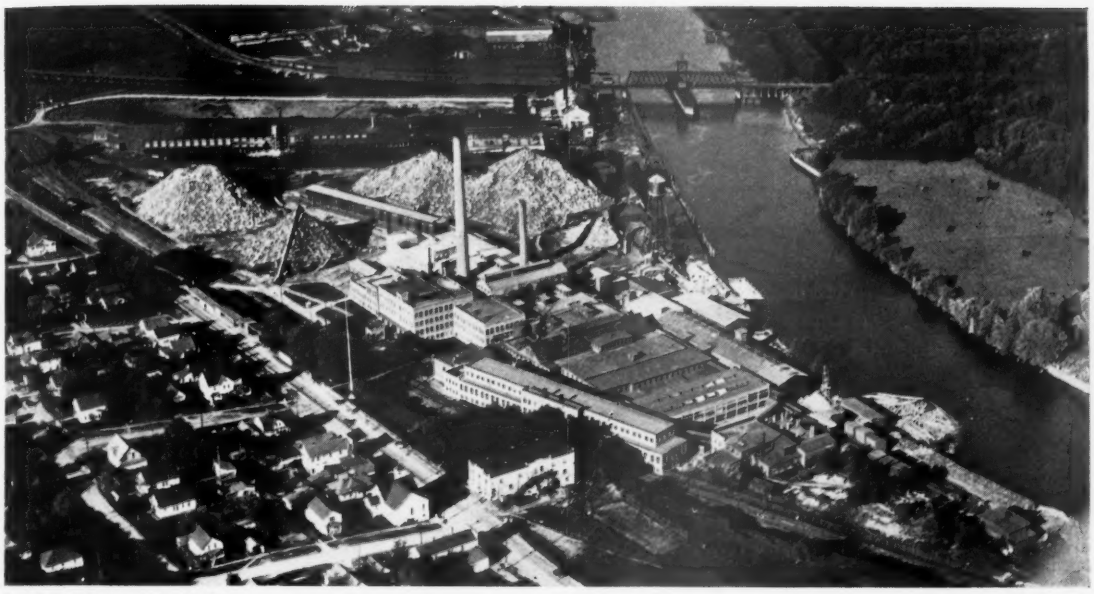
The Western Paper Converting Company operates in Salem as an affiliated company and makes glassine bags and envelopes and a general line of paper specialties, using exclusively paper produced by the Oregon Pulp & Paper Company. This auxiliary company went into operation in 1926.

Mr. P. J. Lamoureux took over the duties of general superintendent on November 1, 1927, and under his direction still further improvements in the mill are being made.

The program of improvement raised the capacity of the Oregon mill from about 45 tons to 110 tons daily. To provide some additional capital for plant improvement, the Oregon Pulp & Paper Co. issued $330,000 worth of first mortgage gold bonds in May, 1927.

The Oregon Pulp & Paper Co. was incorporated under the laws of Oregon in 1918. The mill had its first full year of operation in 1921, and the annual net sales of the company have grown from $580,000 in that year to nearly $1,900,000 in 1926.

The mill is backed by more than a billion feet of standing timber. Mr. Leadbetter is vice-president and one-half owner of the Spaulding Logging Co., which has an operating sawmill adjoining the pulp and paper mill.



Brubaker Aerial Surveys, Portland, Ore.

Everett Pulp & Paper Company, Everett, Washington

Everett Finishes Big Program

EVERETT PULP & PAPER CO., Everett, Wash.	
President and Treasurer	William Howarth
Vice-President and Mill Supt.	A. H. B. Jordan
Secretary	Augustus Johnson
Asst. Mgr. and Asst. Treas.	W. J. Pilz

EVERETT, WASH., has a pioneer venture in the pulp and paper industry of the Pacific Coast in the Everett Pulp & Paper Co. The first units were built in 1891 and manufacture began in 1892. The management has remained the same and has consistently adhered to a policy of quality product. It is one of the two soda process mills on the Pacific Coast making a line of book papers. The Everett mill has been marked with steady progress entirely within the organization.

In January, 1927, the company completed an improvement program which increased the capacity of the mill from 80 to 100 per cent. The mill now has a daily capacity of 50 tons of soda pulp and 75 tons of paper under full production. Douglas fir and cottonwood are used in the pulp mill, but a considerable amount of magazine stock is de-inked and used in paper production.

The principal improvement in the program completed in 1927 was the installation of a new 152-inch machine. The original mill had two machines, 80 inches and 96 inches in width, respectively. The new machine is modern in every respect and is designed for the production of quality book papers. A new machine room was erected to house the new paper mill unit. The new room is 50x324 feet and two stories high.

At the same time an extensive remodeling program was carried out in the rest of the mill. The two older machines were rebuilt and many improvements added. New fourdriniers were installed on both of the older machines and new calendar stacks were added as well.

In the pulp mill there are now nine digesters. Four of these were added in the recent expansion program. These units are seven feet in diameter and 28 feet high. In connection with the pulp mill a new lime burner was installed.

Aside from the new machine room a new two-story finishing room, 68x178 feet, and other auxiliary buildings were added to the mill in the recent improvement.

The Everett mill operates a subsidiary department for the manufacture of composition books, note books, drawing paper and similar lines, used principally in schools.

The Everett Pulp & Paper Co. is located in the community of Lowell, just on the outskirts of Everett, on the Snohomish river just above tide water. Everett is served by deep sea vessels and three trans-continental railroads.

Although no figure which would reflect the expenditure made in improving the mill has been stated by the Everett Pulp & Paper Co., it is believed that a conservative estimate of the cost of the improvements completed in the 1927 program would exceed $1,000,000.

The company was first organized under the name of the Puget Sound Pulp & Paper Co. The corporate name was changed to Everett Pulp & Paper Co. in 1895. When first beginning production, the plant had a soda pulp mill with a capacity of about 15 tons a day and a two-machine paper mill with a like capacity. Subsequent improvements increased the paper mill capacity to about 37 tons per day, which was the daily output of the mill before the completion of the improvements in 1927.

Cascade Paper Company, West Tacoma, Washington

Cascade Increases Book Capacity

CASCADE PAPER COMPANY,
West Tacoma, Wash.

President	Frank S. Baker
Vice-President	John Hewitt
Treasurer	J. T. S. Lyle
Secretary and General Manager	Arthur N. Drips
Superintendent	James I. Fitch

THE Cascade Paper Co., at West Tacoma, Washington, began the production of book paper in 1919 on a single 122-inch machine. The original investment approximated $400,000. Since that time there have been two principal expansions. In 1925 a soda pulp mill with three digesters was added and the mill began the utilization of Douglas fir waste and cottonwood. The pulp mill has a capacity of 25 tons daily. The second expansion program was completed in September, 1927, when a new 156-inch machine began production. Today the plant investment is roughly $1,750,000.

Other improvements were made at the Cascade mill coincidental with the installation of the new machine. The office was shifted and a large new finishing room was constructed and equipped with additional cutters, super-calendars, and other equipment to take care of the increased capacity that the new machine gave. The machine room was extended to accommodate the extra length of the new machine and the steam plant capacity was increased.

The beater room was virtually rebuilt. A three-cylinder washer with flat screens was installed, additional capacity as well as saving of space being achieved by this installation. There were four washers and four beaters in the previous installation, but the beaters have been rebuilt to obtain greater efficiency and capacity. The new Jordans were installed in connection with the new machine.

The new machine is modern in every respect and incorporates many new features added to the science of paper making since the first machine was installed at Cascade. It has electric sectionalized drive, three presses, and a double set of calendar stacks. A breaker press installed in the center of the dryer section enables the mill to turn out real English finish paper.

Additions to the power plant in the 1927 program included a new 900-h.p. boiler, three new transformers, new switchboard and a new 200-foot stack.

With the installation of the new machine completed, the Cascade mill has a daily capacity of 25 tons of soda pulp and 50 tons of book paper. In addition to pulp from its own mill, the Cascade plant converts a considerable quantity of old magazine stock. The mill also has its own department for the manufacture of school tablets and similar supplies. Expenditure made in completing the 1927 improvement program is estimated at $500,000.

The mill is located on tidewater on one of the many smaller bays opening off of Puget Sound. It has its own docks, which will accommodate Sound steamers and scows, and a rail spur connects the plant directly with a main line railroad.

One of the real assets of the mill is the excellent water supply. A small stream empties into the sea at the mill site and from this source an abundant supply of the finest water is always available.

The Cascade Paper Co. is thoroughly a Pacific Coast enterprise. Mr. Frank Baker, president of the company, is a leading newspaper publisher in Tacoma, and a man who takes much interest in civic development. One of his motives in establishing the Cascade mill was to provide another payroll for the West.

Columbia River Paper Mills, Vancouver, Washington

Second Machine at Columbia River

COLUMBIA RIVER PAPER MILLS,
Vancouver, Wash.

President	F. W. Leadbetter
Vice-President	Wm. B. Dubois
Secretary	A. S. Fleming
Treasurer	Hamilton F. Corbett
General Superintendent	Carl E. Braun

COMBINING a saw mill with a pulp and paper mill has apparently worked out to good advantage, if the operations of the Columbia River Paper Mills, at Vancouver, Wash., and particularly the recent expansion of that plant, can be taken as any criterion. This mill is one of the enterprises headed by Mr. F. W. Leadbetter, who has been engaged in the manufacture of pulp and paper on the Pacific Coast for about 35 years. This company was incorporated under the laws of the State of Washington in 1923.

Early in 1927 the company issued $1,000,000 in first mortgage bonds. The principal purpose of this issue was to provide for plant expansion. Shortly after this financial announcement the improvement program began and by October another paper machine had been installed and another sulphite digester had been added.

The sawmill operated in connection with the pulp mill has a capacity of 175,000 feet per 9-hour shift. Commercial lumber is produced at this mill, but a considerable amount of the superior waste is diverted to the pulp mill.

The present pulp mill has four digesters, each with a capacity of 12 tons per cook.

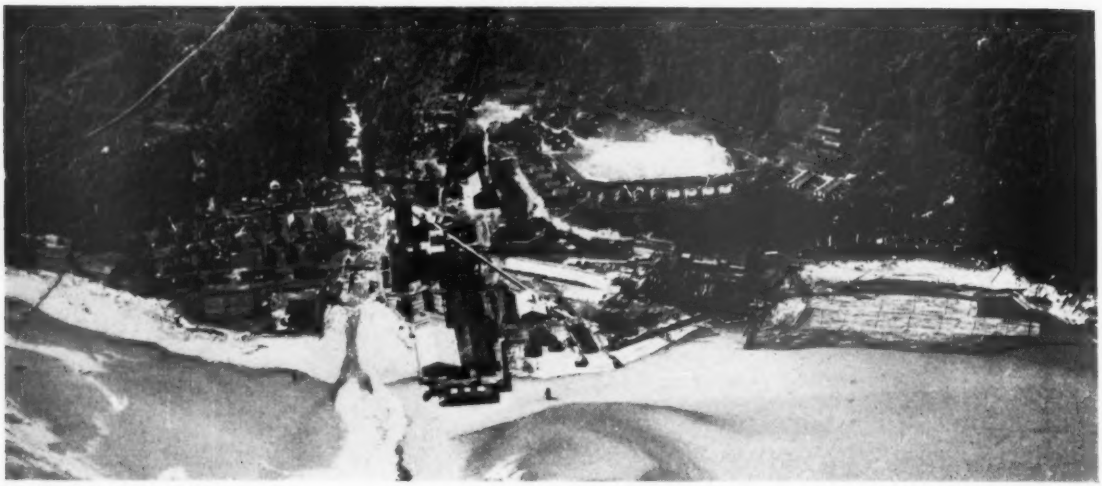
The beater room in the Columbia River mill is located on a balcony which opens on the wet end of the machine room. A thorough program of remodeling was carried out in this department, some new units being added and beaters of older pattern were rebuilt with many of the latest features of design incorporated to handle the mill's increased capacity.

The original machine room was ample in size to care for the new 136-inch machine which was installed during 1927. Excellent time was made in the machine installation. Only seven months elapsed from the time the machine was ordered until it was set up and turning out paper. Electric sectionalized drive and other modern features characterize the new unit. With this machine in operation the daily paper capacity of the mill is stepped up from 50 tons to 80 tons. The Columbia River mill manufactures sulphite wrapping and some miscellaneous grades such as fruit wrap.

Other improvements carried out in 1927 included the installation of two new jordans with the new machine. Some additions were also made to the ground wood pulp mill to increase capacity in that department. A new finishing room was built on to the end of the machine room to give the mill greater finishing capacity and more warehouse space.

The Columbia River mill has a 14-acre site on the Columbia River with a 1,200-foot frontage on the water. The property adjoins the Vancouver municipal docks. Deep sea vessels can load and discharge cargo right at the mill doors. Main line railroad connections also serve the mill with short spurs.

The Columbia River Paper Co. has been organized as a holding company with offices in Portland, from which central office the activities of the Leadbetter interests are directed. The holding company owns 95 per cent of the stock in the Columbia River Paper Mills Co., a like percentage in the Oregon Pulp & Paper Co., with mills at Salem, Ore., and 100 per cent of the capital stock of the California-Oregon Paper Mills at Los Angeles, Calif.



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British Columbia Pulp & Paper Company, Ltd., Woodfibre, B. C.

B. C. Company Improves Two Mills

BRITISH COLUMBIA PULP & PAPER CO., LTD.
Mills at Woodfibre, Port Alice, and Swanson Bay, B. C.
President and Managing Director.....Lawrence Killam
Asst. Mgr. and Treasurer.....O. A. Jorgenson
Woodfibre Plant Manager.....E. P. Brennan
Port Alice Plant Manager.....W. L. Ketchen

THE British Columbia Pulp & Paper Co., Ltd., has three mills—at Woodfibre, Port Alice, and Swanson Bay. Offices of the company are in the Bank of Nova Scotia Building in Vancouver. The first two plants were materially improved in 1927 and their capacities enlarged. The Swanson Bay plant, a combination lumber mill and pulp plant, is at present idle. The three plants were amalgamated into one company under the name of Whalen Pulp & Paper Mills, Ltd., which was subsequently re-organized into the present company.

This company manufactures bleached and unbleached sulphite pulp and has created a name for itself for high quality pulp. Improvements made in 1927 therefore have been made with a view toward increasing quality as well as daily capacity.

Approximately $300,000 was expended in improving the Woodfibre and Port Alice mills. At Woodfibre a tunnel was constructed tapping Henriette Lake to increase the water supply. Other improvements include new screen and riffler departments, two new acid storage tanks, a rotary sulphur burner, new chip screen, new machine shop, and additions to the warehouse which doubled the warehouse capacity. New tennis courts were built also and general improvements made in the townsite.

The Port Alice plant, which lies on the northwestern coast of Vancouver Island, was enlarged in capacity by the addition of a new digester 16 by 46 feet and additions were made to the existing digester house to accommodate this new unit. Other improvements at this mill include improvements in the screen room, new hydraulic presses in the machine room, and a wet machine. The capacity of the water system was enlarged and additional bleaching equipment installed. This mill specializes in bleached sulphite. Improvements in the power house include the installation of a 2,000 k.w. turbine. A new community hall was built for the town to provide recreation for the employes. Two new churches were also built.

With the 1927 improvements completed the Woodfibre plant has a daily capacity of 120 tons of easy bleaching sulphite pulp. The Port Alice plant has a daily capacity of 100 tons of bleached sulphite. The idle Swanson Bay plant has a capacity of 40 tons a day.

The three mills now under the management of the B. C. Pulp & Paper Co., Ltd., began as separate enterprises, were later consolidated into the Whalen Pulp & Paper Co., Ltd., and then to the present company. The history of the company has not all been bright, but the record shown to the stockholders of the present company in the first annual report, made in 1927, was encouraging and reflects well upon the conservative guiding policy of President Killam.

The company's pulp is meeting with favor in export trade to Japan and other Oriental markets.

British Columbia Pulp & Paper Company, Ltd., Port Alice, B.C.

Brubaker Aerial Surveys, Portland, Ore.

Fidalgo Pulp Manufacturing Company, Anacortes, Washington

New Sulphite Mill at Bellingham

SAN JUAN PULP MANUFACTURING CO.,
Bellingham, Wash.
FIDALGO PULP MANUFACTURING CO.,
Anacortes, Wash.

President	Ossian Anderson
Vice-President	William Morrison
Secretary-Treasurer	O. M. Green
Fidalgo Superintendent	C. B. Everitt

THE San Juan Pulp Manufacturing Co., at Bellingham, Washington, although beginning production in October, 1926, is recent enough to be classed in a first review of Pacific Coast pulp and paper development. With its associated company, the Fidalgo Pulp Manufacturing Co., at Anacortes, which enlarged its capacity in 1927, it comprises a significant expansion in the Pacific Coast sulphite industry.

The San Juan plant is a two-digester mill with a rated daily capacity of 45 tons of unbleached sulphite. It operates on waste box wood obtained from lumber mills of Bellingham and the Puget Sound area. The Fidalgo plant is very similar in design and utilizes the same type of wood. Both of the mills use the Fidalgo system of pulp drying and shredding. In fact, this system of pulp drying takes its name from the Fidalgo plant, where the method was first tried out.

The San Juan mill is located close in to the business section of Bellingham and near several large lumber

San Juan Pulp Manufacturing Company, Bellingham, Washington

Vancouver Kraft Mills, Ltd., Port Mellon, B. C.

mills which are supplying waste wood and hog fuel. Rail spurs serve the plant directly and the mill also has easy access to deep sea shipping.

The buildings are for the most part of wood construction, simple in design. There are an office, wood room, boiler house, acid room, Jenssen acid towers, wooden acid storage tanks and a main building. The main building houses the chip bin and two digesters, screen room, pulp drying system and shredder, and baling and storage room.

Plant investment is approximately $500,000.

The Fidalgo Pulp Manufacturing Co. doubled its capacity with improvements which were completed in May, 1927. It is now rated at 45 tons of unbleached sulphite per day. Another digester was added, the screens were doubled, and a new Fidalgo system dryer was installed along with another wet press. Little change was made in the existing buildings. In line with this improvement, the city of Anacortes made certain improvements in the water system.

Approximately $100,000 was expended in improving the Fidalgo mill, bringing the total recent expenditures for the two mills under the one management up to $600,000.

Further improvements made in the pulp mill consisted of betterments in the acid system and a modest increase in capacity of the groundwood mill.

Ten Leading Industries of Washington

Latest Federal Census

1.	Lumber and timber products	$308,752,327
2.	Foundry, machine shop products	40,187,726
3.	Flour and grain mill products	39,025,606
4.	Slaughtering and meat packing	26,453,685
5.	Printing and publishing	20,635,155
6.	Canning and preserving	17,949,834
7.	Butter	15,996,284
8.	Bread and bakery products	13,883,715
9.	Paper and Wood pulp	13,458,535
10.	Confectionery and ice cream	8,209,070
	Total	$504,551,937

Mills of today depend on the forests of tomorrow. As our reforestation plans are made and carried out now, just so will the industry of the future thrive or perish.

May Rebuild B. C. Mill

VANCOUVER KRAFT MILLS, Ltd.,
Port Mellon, B. C.

President	F. W. Leadbetter
Secretary-Treasurer	W. B. DuBois
Superintendent	T. Iverson

THE Vancouver Kraft Mills, Ltd., at Port Mellon, on Howe Sound, B. C., were put into trial operation for a few months beginning in April, 1927. This plant was formerly held by the Western Canada Pulp & Paper Co., and was still later known as the Howe Sound Pulp & Paper Co. Following a varied career and periods of idleness, the mill property passed early in 1927 into the hands of the Leadbetter interests, which operate three mills in the United States, namely, Columbia River Paper Mills at Vancouver, Wash.; Oregon Pulp & Paper Co. at Salem, Ore., and the California-Oregon Paper Mills, at Los Angeles, Calif. The purchase price, as shown in the public records, was $250,000.

Following the acquisition of the property, Mr. F. W. Leadbetter spent some time at the mill and Mr. T. Iverson was placed in charge as superintendent. The existing installation of machinery was utilized and it was understood that the mill was being given a tryout to ascertain the suitability of the equipment. Pulp production closed down in the autumn. The mill has a daily capacity of 35 tons of sulphate pulp. The product was being used mainly by the other Leadbetter mills.

At the close of the year the mill was being studied from an engineering standpoint. The plant uses coal for generating steam and the possibility of hydro-electric development was being considered. In addition to this power change, which will cost an estimated $500,000, it is expected that the mill will be extensively remodeled and its capacity increased, perhaps to 100 tons, although no definite announcement had been made at the end of the year concerning the exact disposition to be made of the proptery.

Pacific Mills, Ltd., a Canadian subsidiary of the Crown Willamette Paper Co., is the only other mill in British Columbia at the present time producing kraft pulp and paper.

California Fruit Wrapping Mills, Inc., Pomona, California

California Mill Makes Fruit Wrap

CALIFORNIA FRUIT WRAPPING MILLS, INC.,
Pomona, Calif.

President	F. O. Fernstrom
Vice-President	Eric Fernstrom
Secretary-Treasurer	F. G. Fernstrom

THE California Fruit Wrapping Mills, Inc., at Pomona, California, is largely of Swedish origin. It began production on November 2, 1926. The mill was built to fill a demand for fruit wraps for the citrus fruit industry of California. It has a daily production capacity of nine tons and is said to have made contracts for fruit wraps sufficient to keep the mill busy for five years.

The machinery for the most part was made in Karlstad, Sweden, and installation of the equipment was supervised by an engineer who came to California from Sweden for the purpose. Sulphite pulp from Sweden is used in making the wrappers.

The buildings include the mill proper, boilerhouse and pump house. The site includes a five-acre tract at the western boundary of Pomona, a community situated at the outskirts of Los Angeles. A railroad flanks one side of the property. Water is supplied from a deep well having a capacity flow of 1,400 gallons per minute.

New Pacific Coast Tissue Supply

PACIFIC COAST PAPER MILLS
Bellingham, Washington

President	J. J. Herb
Vice-President	R. F. Arnett
Secretary	E. M. Herb
Treasurer	H. M. Lord
Superintendent	P. J. Herb

THE Pacific Coast Paper Mills at Bellingham put into operation in March, 1927, a new unit for the making of toilet tissues, paper towels, and allied products. About two years before, the company had built on the same site a finishing plant for making toilet paper, paper napkins, etc. The paper was imported from Canada in jumbo rolls from the Westminster Paper Mills, Ltd., at New Westminster, B. C., which company is operated by the same principals.

The extension completed in 1927 consists of a new two-story steel and concrete building 45 by 240 feet. Stock chests, stuff pumps, and filters are installed on the lower floor. On this level is also an ample storage space. The upper floor has as its main piece of equipment a cylinder dryer. There is also a creping machine, and other equipment, such as beaters. This floor is connected directly by a passageway with the finishing department in the older building.

The mill is buying its sulphite and groundwood pulp

Pacific Coast Paper Mills, Bellingham, Washington

on the market. Situated on a site very close to the San Juan Pulp Manufacturing Co., the management has found it advantageous to draw its steam requirements from that company. Rail and ocean shipping facilities are very good.

Total investment in the plant is about $275,000. The improvements completed in 1927 represent an expenditure of approximately $175,000.

Roofing Plant Branches Out

SIDNEY ROOFING & PAPER CO., LTD. Victoria, B. C.	
President	J. W. Spencer
Managing Director	Robert W. Mayhew

THE Sidney Roofing & Paper Co., Ltd., spent approximately $100,000 in 1927 in making additions and improvements to its plant at Victoria, B. C. The company was established in 1912. It manufactures roofing and building paper, dry and saturated felts, and board.

In the existing plant a new dryer for the manufacture of roofing was installed, and a 36-dryer machine for the manufacture of building papers and board was also added. In this department the company utilizes old carpets and rags, waste papers, and also new pulp. These additions along with other improvements in the older portion of the mill cost about $60,000.

The Sidney company also entered a new field with the building of a ten-ton groundwood mill. The roofing plant is located on tide water and is also served with direct rail connection. The new pulp mill is located a short distance from the board and roofing mill, but with equal facilities for rail and water.

Principal equipment in the groundwood mill includes one four-pocket grinder, with provision for the installation of more grinders to an ultimate 40-ton capacity. A wet press and the necessary screens are also included in the installation. The entire mill is housed in a new building. Production began in October.

On October 1 the company issued $350,000 in preferred stock to refinance and cover costs of improvements made. Confidence of the public in the company was evidenced by the fact that the issue was over-subscribed several days before it was actually put on the market.

Union Bag Starts $2,200,000 Plant

UNION BAG & PAPER POWER CORP., Tacoma, Wash.	
President	C. R. McMillen
Vice-Pres. in Chg. of Mfg.	E. B. Murray
Chairman of the Board	M. B. Wallace
Chairman, Executive Committee	August Heckscher
Resident Manager	W. W. Griffith
General Superintendent	Joseph E. Hedin
Resident Engineer	L. R. Wood
Consulting Engineer	Hardy S. Ferguson

RUMOR that the Union Bag & Paper Corporation was looking for a location in the Pacific Coast was in the air long before the definite announcement in September, 1927, that the company had decided to build a 120-ton sulphate mill at Tacoma, Washington. Following this announcement, the Union Bag & Paper Power Corp. was organized as a wholly owned subsidiary of the Union Bag & Paper Corp., with Mr. C. R. McMillen as president.

The new organization owns hydro-electric and steam electric power plants at Hudson Falls, N. Y., and began construction on January 1, 1928, on the pulp mill at Tacoma. This Pacific Coast project will cost about $2,200,000 for the pulp mill alone.

Mr. McMillen was on the Pacific Coast for several weeks prior to the time that the announcement was made, and during that time he made an extensive survey of the possibilities of the Western area. The company had also been looking over the South and decision to locate in Tacoma is therefore considered of more than usual importance.

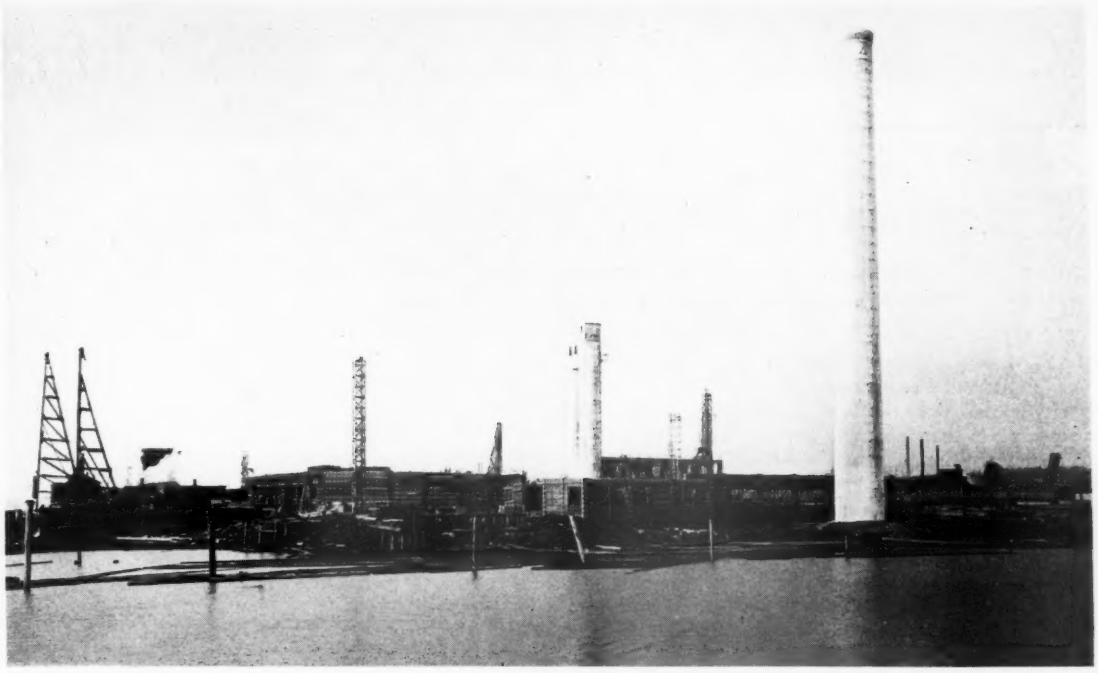
The Tacoma mill will be a four-digester plant and will make pulp only for the time being, but the plans are broad enough to permit the installation of paper-making machinery at a later date if such a step becomes feasible. The company is understood to have negotiated a favorable rate on pulp for water shipment to the Atlantic Coast, where the product will be used exclusively in the paper mills of the Union Bag & Paper Corp.

A site with tide-water frontage was secured adjoining the St. Paul & Tacoma Lumber Co., in Tacoma. Favorable contracts with the lumber mill have been made over a period of 25 years—with option to renew—for a wood supply, and the company will therefore not find it necessary to invest extensively in timber lands, according to President McMillen. The St. Paul & Tacoma Lumber Co. is building a Western hemlock mill with a daily capacity of 150,000 feet to facilitate handling its part of the wood supplying contract.

Following the announcement that the company would build at Tacoma, the Union Bag & Paper Power Corp. offered a $3,000,000 issue of first mortgage bonds.

The Tacoma mill will embody all the latest improvements in kraft mill construction, President McMillen has announced, and the buildings will be of first class permanent construction. Hardy S. Ferguson, New York, is the consulting engineer. An office was opened in Tacoma in December and staff members concerned with construction were on the ground to witness the beginning of construction at the first of the year. It is hoped to complete the mill not later than November 1, 1928.

Out of the total stand of timber in British Columbia of 366,300,000M. feet B. M., half the total merchantable timber of Canada, there is estimated to be more than 182 billion feet of pulpwood—64 billion feet of Western hemlock, 32 billion feet of balsam, 12 billion feet of lodge pole pine and one billion feet of cottonwood.



Progress of Construction at Grays Harbor Pulp Co., Hoquiam, Washington, at Close of 1927

Grays Harbor Building 150-Ton Mill

GRAYS HARBOR PULP CO. Hoquiam, Wash.	
President	E. M. Mills
Vice-President	J. D. Zellerbach
Vice-President	John C. Higgins
Vice-President	O. C. Schoenwerk
Secretary-Treasurer	S. Sonnenburg

DOWN in the Grays Harbor territory in Washington, heart of one of the world's greatest timber regions, there was much activity in pulp and paper in 1927. One project which got definitely under way during the year is the Grays Harbor Pulp Co., a subsidiary of the Zellerbach Corporation. Construction was well along at the close of the year on a sulphite mill which is understood to have a rated daily capacity of 175 tons of unbleached pulp, or 150 tons of bleached pulp.

Work on this mill began in earnest in May, 1927. The company had acquired a site on the Hoquiam river not far from the main district of Hoquiam, one of the two principal cities of Grays Harbor. The site was formerly occupied by the National lumber mill, but a fire had destroyed that enterprise at a previous time. It was first necessary to clear the site of the accumulated debris left by the burned mill. Pile driving then began in earnest, several pile drivers working three shifts per day when work was at the peak. The job offered some unusual engineering problems. It was necessary to use piling of unusual length and some 7,000 were sunk to form the foundation structure for the big mill.

The Grays Harbor Pulp Company's mill will be similar in construction to the Rainier Pulp & Paper Company's mill at Shelton, Wash., but will be on a larger scale all around. While no complete details of construction have been given out it is understood that the mill will have the largest digesters in the world, 19 feet 3 inches in diameter and 58 feet high. The capacity of each digester is given at 25 tons per cook.

The completed pulp mill will include an acid system, bleaching system and pulp drying machine of the vertical cylinder type.

The Grays Harbor mill will have its own power plant and will have greater storage and warehouse space than the Rainier mill.

At the close of the year construction was well advanced and good progress was being made despite some unfavorable weather which had been experienced. The stack was completed, the acid towers were in place, and concrete was being poured as high as the second level. It is expected that the pulp mill will be in operation in the summer of 1928.

Water for the mill was to have been provided by the mill's own system tapping the Little Hoquiam river and water rights were asked from the state and permission was granted by the City of Hoquiam to lay a water line through the city to the mill. However, no constrction on this line had been undertaken by the end of the year and, as the company had approached the City of Aberdeen for water from that city's now-building industrial water system, it was felt that the company might abandon its own projected water line.

There was considerable talk in the Harbor at the close of the year that the Grays Harbor Pulp Co. would include a paper mill when completed, but no official statement to substantiate this rumor had been made.

The finished mill at Hoquiam will represent an investment of more than $3,000,000.

Constructing $3,000,000 Kraft Mill

NATIONAL PAPER PRODUCTS CO.,
Port Townsend, Wash.

President	J. D. Zellerbach
Vice-President	E. M. Mills
Vice-President	I. Zellerbach
Secretary	A. I. Ellis
Treasurer	S. Sonnenberg

WHAT a new industry can do for a community has never been better evidenced than in the case of Port Townsend, Wash. About 1890, this city experienced a remarkable boom when there were prospects that it was to be the "key city" for Pacific commerce out of the Northwest. Its location on the inland side of the Olympic peninsula, at the head of Puget Sound, indicated great things, but the city never materialized.

When it became known that the Zellerbach Corporation had been looking over Port Townsend as a possible location for a big kraft mill the town became tremendously active, sent a 3,000-word petition telegram to the San Francisco offices of the Zellerbach corporation that stated in effect that the citizens of Port Townsend were ready to bond themselves for the purpose of building the needed industrial water system. Events followed in quick succession after that. The outcome of all was that at the end of 1927 the initial work of pile driving was completed and work was proceeding rapidly on a sulphate mill which will cost between $2,500,000 and $3,000,000.

Port Townsend's part consisted in building an industrial water system. Survey work was rushed on this job with the aid of an aerial photographer. The completed water system will cost about $800,000. It will bring water from the Little Quilcene River, about 24 miles distant, and will deliver a daily supply of water at Port Townsend of about 16 million gallons.

The mill site is on tide water, about one mile from the business district of Port Townsend. The mill is being built by the National Paper Products Co., a subsidiary company of the Zellerbach organization. The company has acquired a site of 280 acres of tide lands and has driven a bulkhead of piling and filled in with a dredge to deepen the water at the mill wharves. The largest of ocean vessels will be able to load at the mill.

Full details of what the completed mill is to be have not been announced, but it has been stated that the same type of sturdy construction, concrete and steel, as used at the Rainier Pulp & Paper Co. and other mills built or building by this same group will be employed at Port Townsend.

In operation it is believed that some new features will be brought out. The Port Townsend mill will have a general resemblance to the mill of the Longview Fibre Co. in type of product and will have a daily capacity of 100 tons of kraft board daily. It will use a 132-inch vertical dryer type of board machine of the same type as is now installed at the Longview Fibre Co. First shipments of the machine were scheduled to arrive at Port Townsend about the 1st of February, 1928.

Some details necessary to iron out served to delay progress somewhat at the beginning of construction, but the hope of the company was to rush the mill through to completion as rapidly as possible. In that respect weather conditions are favorable, as the Port Townsend district has a climate which in no way hampers winter building. It was expected that the mill would be in operation sometime in the fall of 1928.

As the National Products Co. is now principally a distributing organization, having merged its board mills and container and converting plants with the Paraffine Co.'s, Inc., to form the Fibreboard Products Co., Inc., it is believed that the Port Townsend mill will be merged with Fibreboard upon completion.

New Groundwood Pulp Mill

OCCIDENT PULP & PAPER MILLS, INC.,
Edmonds, Wash.

President	Joseph E. Molyneux

THE Occident Pulp & Paper Mills, Inc., at Edmonds, Washington, is the only Pacific Coast mill producing ground wood pulp exclusively. It began production in March, 1927. The daily rated capacity is 30 tons.

The mill is located on tidewater immediately adjacent to a main line railroad. A large wooden building, erected during the war but never used, was converted to pulp mill use.

The equipment consists of four grinders, each two being driven by a 1,250 h.p. synchronous motor. The screens are located on an upper floor and the wet presses are on the same level as the grinders.

A 600-ton hydraulic press was installed to press the pulp, but negotiations under way at the close of the year pointed toward the installation of a steam drying system employing a new principle, thus enabling the mill to reach the Eastern markets with its pulp. Power is purchased from a public utilities company which has a substation at the mill.

The mill pulps both spruce box ends, obtained from saw mill, and cottonwood cordwood. It has its own log pond in the event of turning to logs in the future. Water is obtained from a nearby small stream.

The company was incorporated in the State of Washington in March, 1926, and was financed by the sale of common stock. Plant investment is about $200,000.

Quebec Timber Cutting to Be Reduced in 1928

A statement recently given out by the chief of the Forestry Service of the Province of Quebec declares that the timber cut this winter will be reduced another 20 per cent bringing the average down 40 per cent under normal. The total timber cut for the province for the 1926-27 season has now been fixed at 2,092,146,300 feet board measure by the Department of Lands and Forests. It is acknowledged, however, that these figures are probably under the actual cut as officials have encountered considerable difficulty in obtaining anything like a full number of returns, especially from the small operators. The report is made by Vice Consul George H. Barringer, Quebec.

PULP AND PAPER CAPACITIES OF PACIFIC COAST MILLS

Showing principal grades manufactured and capacities in tons per 24-hour day on Dec. 31, 1927

Name of Mill	Location	PULP					PAPER					
			Sulphite					Wrapping				
		Mechanical	Bleached	Unbleached	Sulphate	Soda	News	Sulphate	Sulphite	Writing and Book	Board	All Others
ALASKA												
Alaska Pulp & Paper Co.	Speel River	16										
BRITISH COLUMBIA												
British Columbia Pulp & Paper Co.	Woodfibre			120								
British Columbia Pulp & Paper Co.[1]	Swanson Bay			40								
British Columbia Pulp & Paper Co.	Port Alice		100									
Canadian Forest Products, Ltd.[1]	Beaver Cove				40							
Pacific Mills, Ltd.	Ocean Falls	190		60	50		250	50				
Powell River Co., Ltd.	Powell River	340		130			450					
Sidney Roofing & Paper Co.	Victoria	10									20	5
Vancouver Kraft Mills, Ltd.[2]	Howe Sound				40							
Westminster Paper Mills, Ltd.	New Westminster											18
WASHINGTON												
Cascade Paper Co.	West Tacoma					25				50		
Columbia River Paper Mills	Vancouver	15		70					80			
Crown Willamette Paper Co.	Camas	100	150		60		150	60	40			60
Everett Pulp & Paper Co.	Everett					50				75		
Fibreboard Products, Inc.	Port Angeles	30		30							50	
Fibreboard Products, Inc.	Sumner										40	
Fidalgo Pulp Manufacturing Co.	Anacortes			45								
Inland Empire Paper Co.[4]	Millwood	75		30			107					
Longview Fibre Co.[3]	Longview				100						100	
Occident Pulp Mills[3]	Edmonds	30										
Pacific Coast Paper Mills	Bellingham											15
Pacific Straw Paper & Board Co.	Longview										30	
Rainier Pulp & Paper Co.[3]	Shelton		135									
San Juan Pulp Manufacturing Co.	Bellingham			45								
Tumwater Paper Mills Co.[3]	Tumwater	20							40			
Washington Pulp & Paper Corporation	Port Angeles	200		70			270					
OREGON												
Crown Willamette Paper Co.	Lebanon			30								30
Crown Willamette Paper Co.	West Linn	350		90			330					15
Hawley Pulp & Paper Co.	Oregon City	150		85			120		85			
Oregon Pulp & Paper Co.[5]	Salem		90	15					105			
St. Helens Pulp & Paper Co.	St. Helens				60			60				
Spaulding Pulp & Paper Co.[3]	Newberg			50								
CALIFORNIA												
California Fruit Wrapping Mills	Pomona								9			
California-Oregon Paper Mills	Los Angeles								40			
Certainteed Products Co.	Richmond											38
Crown Willamette Paper Co.	Floriston	15	45									40
Fibreboard Products	Los Angeles										100	
Fibreboard Products	Stockton										200	
Fibreboard Products	San Francisco										8	
Fibreboard Products	Antioch										165	
Los Angeles Paper Manufacturing Co.	Los Angeles											30
Paraffine Co., Inc.	Paraffine Sta.											60
Pioneer Paper Co.	Los Angeles											60
COLORADO												
Colorado Pulp & Paper Co.	Denver	15									50	
		1556	520	910	350	75	1677	170	399	125	763	371

[1]Mill idle.
[2]Mill operated few months in 1927. Now idle.
[3]New mill. Began production 1927.
[4]Paper capacity includes some miscellaneous grades.
[5]Specializes in glassine, greaseproof, etc.
"All Others" includes such miscellaneous items as roofing, building papers, deadening felts, tissues, etc.

Pacific Export Trade Prospects

By JOHN MATHEWS, JR.
Chief, Paper Division Bureau of Foreign and Domestic Commerce

THE paper industry is not new to the Pacific Coast. It has been in existence there for a number of years, but until recently—that is within the last few years—its operations, so far as markets are concerned, have been limited largely to the Pacific Coast states, due to the fact that production was about equal to demand in that area and there was no great need for the cultivation of outside markets. This situation, however, has been changed through the new development which has taken place within the past few years. New mills have been organized and put into operation and the capacity of some of the older mills increased. On top of this, new projects are under way which will further increase the capacity of the industry within a very short time.

It would be extremely difficult if not impossible, without a thorough survey of the market situation on the Pacific Coast, to determine accurately to what extent demand has kept pace with mill capacity, but it seems safe to assume that when all the mills projected come into operation there will be a surplus of product to be disposed of in outside markets. Undoubtedly this has been given serious consideration as far as domestic demand and competition is concerned; therefore no attempt will be made in this article to cover the domestic phase. There is, however, a question as to whether sufficient attention has been given to export trade as a possible outlet for marginal capacity.

Exports Increasing

Statistics over the past five years show that, with the exception of 1926, when there was a substantial gain over the preceding year, the average value of the paper trade of the Pacific Coast states has been $2,125,000, which represents approximately eight per cent of the total paper exports of the United States. Using the figures of the 1925 census of manufacturers as a basis, this compares very favorably with a production valued at $32,187,000, or four per cent of the country's total output. It is probable, however, that a portion of the eight per cent was contributed by mills in other sections of the country who export through distributors on the Pacific Coast. While our western mills in 1925 increased their actual production over that of 1923 to $37,934,000, or by 18 per cent, the fact remains, however, that the gain in export business during the same period did not show a corresponding gain. This is easily deduced from Table I., which shows the export of paper and paper products from the West Coast during the years 1922 to 1926 inclusive.

This naturally brings up the question as to what prospects there are and what steps can be taken to secure a larger share of the business in markets accessible to Pacific Coast mills. The Far East at the present time offers the largest potential market, consumption of imported papers in that region averaging between $65,000,000 and $75,000,000 annually, while about one-half of this amount is imported by the South American countries. Reference to Tables No. II. and No. III. below showing paper imports into the leading Far Eastern and South American countries indicates that a very small share of this trade is being enjoyed by the United States manufacturers. Even if we omit the South American countries, which are admittedly harder to reach and harder to cultivate than those of the Far East, it will be seen that our trade still falls far short of what it might be.

TABLE No. I

Exports of Paper and Paper Products From the West Coast of the United States

Year	California	Oregon	Washington	Total	Per cent of total U.S.
1922	$1,229,228	$286,059	$537,457	$2,052,744	8
1923	1,165,231	162,618	602,245	1,930,094	7½
1924	1,521,177	136,669	535,354	2,193,200	9
1925	1,065,256	597,303	366,128	2,028,687	8
1926	1,272,174	717,522	428,455	2,418,151	9
Total	$6,253,066	$1,900,171	$2,469,639	$10,622,876	
Av. per yr.	1,250,613	380,032	493,928	2,124,575	8½

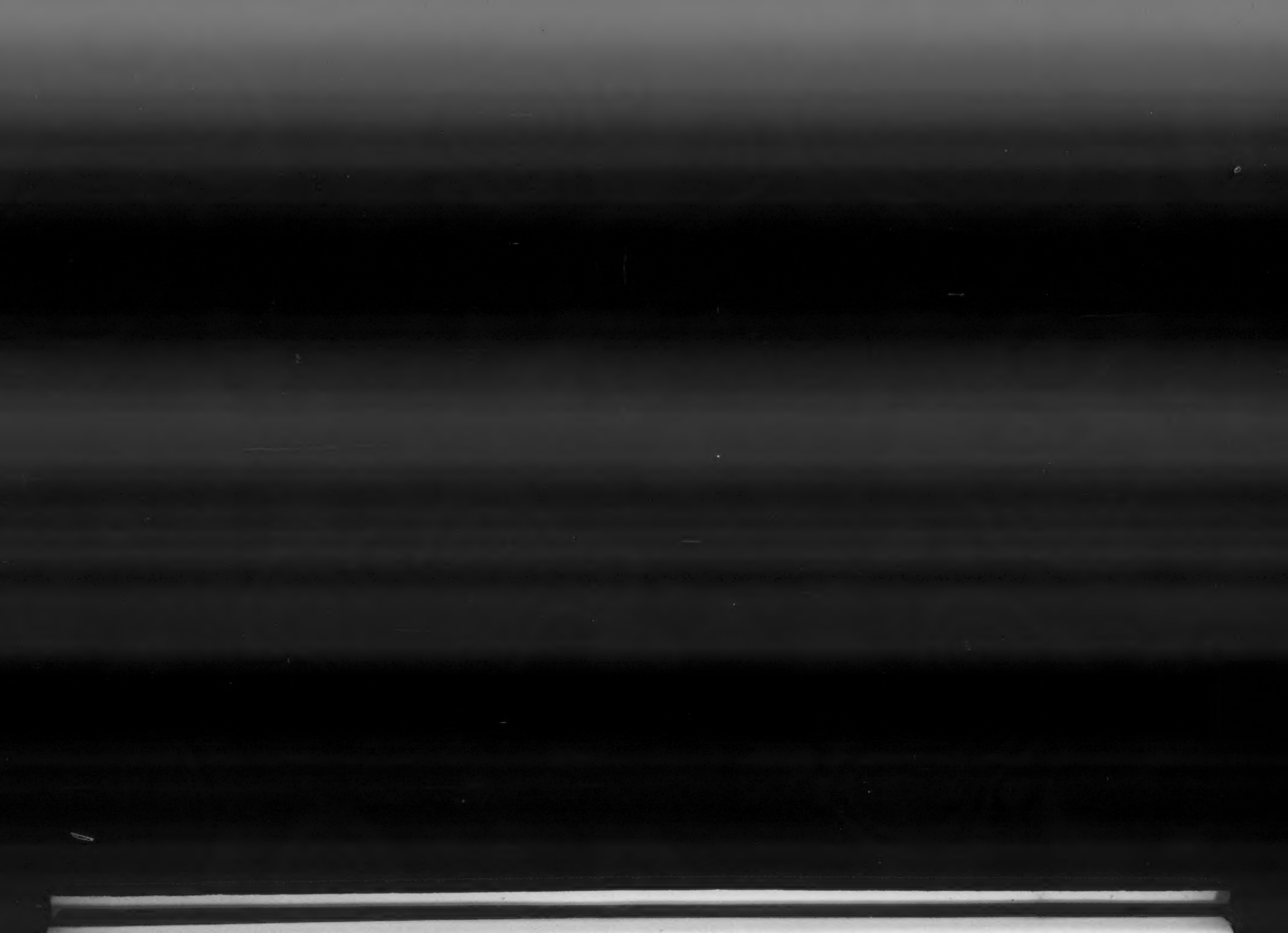
European Competition

Our failure to secure a larger share of business in this region is undoubtedly due in a considerable measure to competition from European countries, where production costs are generally lower than in the United States. Moreover, in Australia and New Zealand, where in addition to a natural partiality for goods from the mother country there is a preferential tariff which gives British and Canadian products a great advantage, our difficulties are increased. It is worthy of note, however, that in these same areas Scandinavian and other European producers are securing a large share of the trade, notwithstanding that they are confronted with exactly the same obstacle. In other Far Eastern and South American markets all countries are on an equal basis when it comes to import tariffs, domestic competition and the lower production costs of other countries being the chief obstacles American manufacturers have to face.

Ground Gained and Lost

Lower production costs are, of course, a rather difficult handicap to overcome, but they are not entirely insurmountable; otherwise we should not be enjoying even the small share we now have in this trade. There is another factor which plays a very important part, and that is the extent to which efforts are made to cultivate a market and to make sales. We gained a considerable advantage during the war, owing to the fact that practically all the world had to look to the United States for supplies, only to lose that advantage later because export trade was lost sight of in the increasing demand from domestic sources. In other words, we practically stepped out of the export picture, thereby losing all the headway we had gained and leaving the field free to outside competitors. It is perhaps too late to regain all the ground we have lost, but undoubtedly some increase in business can be secured if a concerted effort is made by the Pacific Coast mills to cultivate these markets. It must be done if export trade is to be anything of a factor as an outlet for surplus supply.

Taking our present export schedule to the Far Eastern and South American countries as a guide, it would seem that our best prospects as far as grades of paper are concerned lie in the newsprint, wrapping, writing and book paper fields, all of which products are in



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J. L. MURRAY

Executive Vice-President Pacific States Paper Trade Association
Manager Mutual Paper Corporation, Seattle

TABLE NO. II

Imports of Paper and Paper Products Into the Far East

Country	*Total Imports 1926	**From U.S. 1926	Total Imports 1925	From U.S. 1925	Total Imports 1924	From U.S. 1924
British India (1)	$10,196,589	$ 171,932	$ 9,644,345	$ 213,360	$ 8,433,184	$ 424,603
Australia (2)	21,759,270	1,154,822	21,687,518	968,277	18,551,573	829,500
New Zealand	5,547,494	323,393	4,443,639	314,849	4,896,339	310,822
China	20,249,719	1,622,936	17,087,015	1,196,854	17,533,700	2,003,652
Japan	10,183,076	884,379	12,494,303	1,221,819	9,150,782	1,419,810
Netherlands East Indies	(3)	120,283	4,196,556	61,694	3,391,039	122,642
Philippine Islands	2,156,705	1,279,119	1,849,288	1,078,635	1,816,553	1,089,243
Hawaii	(3)	1,747,591	1,752,697	1,717,447	1,616,383	1,567,886
Total	$70,092,853	$7,304,454	$73,155,361	$6,772,935	$65,389,553	$7,768,158

*Based on official statistics of country in question. **Based on United States exports figures. (1) Fiscal year ending March 31. (2) Fiscal year ending June 30. (3) Not available.

TABLE NO. III.

Imports of Paper and Paper Products Into South America

Country	*Total Imports 1926	**From U.S. 1926	Total Impts. 1925	From U.S. 1925	Total Impts. 1924	From U.S. 1924
Argentina	$20,503,756	$ 832,272	$22,118,771	$ 858,651	$17,871,618	$ 683,520
Bolivia	(1)	9,007	(1)	9,335	235,440	13,253
Brazil	9,614,539	295,392	7,897,596	318,850	7,750,050	303,792
Chile	3,426,754	191,611	3,002,990	187,993	3,232,079	157,391
Colombia	(1)	361,336	(1)	386,181	1,757,126	336,417
Ecuador	(1)	38,999	229,280	55,680	288,819	44,935
Paraguay	(2)	378	(2)	3,215	(2)	582
Peru	(1)	144,755	151,001	142,494	153,759	193,433
Uruguay	(1)	128,211	1,057,826	100,221	726,652	89,607
Venezuela	(1)	319,781	679,146	305,049	568,748	224,729
Total		$2,321,742	$35,136,610	$2,367,669	$32,584,291	$2,047,659

*Based on official statistics of the country in question. **Based on United States export figures. (1) Not available. (2) Not shown separately.

good demand. While it is noteworthy that a good proportion of our exports in these lines are already going to the Far East, a comparison of our shipments to that region with its imports indicates that American paper exporters have little more than touched this vast market. During 1926 our total shipments of newsprint and book papers to the Far East amounted to only 11,109 tons, whereas British India alone impotred 34,-720 tons of printing papers, Japan 20,943 tons, and China 7,144 tons. The United States is already supplying about one-third of the total imports of writing and other fine papers into China, but shipped only 79 tons to British India and 210 tons to Japan last year, as against these countries' receipts of 10,633 tons and 2,701 tons respectively. In wrapping papers and boards, two other items in fair demand in this region, the share of the United States is even smaller.

It is worthy of note that throughout the Far Eastern markets Japan is an important factor in the matter of competition. The Island Empire produces a number of the cheaper grades of paper that are in great demand and these are peculiarly suited to the demands of the consumers. In addition, that country has the advantage in being relatively close to the consuming centers and hence enjoys lower freight rates and can deliver in less time than can other producing countries.

In the Far East

This is of less importance, however, in connection with a number of the better grades of papers, notably machine glazed ("China") cap, printing papers other than news, writing papers and envelopes, and some grades of board. Heretofore the Scandinavian countries and others of the European producing nations have obtained and kept a considerable part of the trade in these items, but this has been due largely to the lack of consistent effort on the part of our manufacturers to develop this market for themselves in the face of competition from Europe. The elements of price and time of delivery appear to be the only obstacles of any outstanding importance and with proper study these could to a large measure be overcome.

While the tariff schedule of India gives no perference to paper of British manufacture, our mills are at somewhat of a disadvantage owing to a more frequent freight service enjoyed by the European producer which makes it unnecessary for the purchasers to keep large stocks on hand. The market for uncoated book and medium grade writing from the United States could, however, be developed to a considerably greater extent than it is at present.

Turning to the South American market, we encounter similar conditions. Taking Argentina, which receives roughly one-third of all the paper imported into South America, we find that in 1926 newsprint receipts totaled 102,427 tons, of which the United States supplied in round numbers only 3,000 tons. During the same year 15,395 tons of boards and 22,593 tons of book paper were received, with the United States supplying 133 tons and 314 tons respectively.

South American Market

In Chile, importing firms are apparently of the unanimous opinion that price is the only genuine factor keeping American papers out of that market, their quality and the service offered being better than that of our European competitors. The market for newsprint, hand-sized book with from 10 to 15 per cent groundwood and similar varieties can be further developed provided the price element is given proper attention and packing requirements can be rigidly adhered to. Roughly the same statement applies to the entire South American trade with the possible exception of Venezuela and Colombia where we have considerable advantage over European producers because of our nearness to the market and consequent ability to make more prompt deliveries.

Progress Up to the Producers

Briefly, the development and exploitation of foreign markets for the products of our Pacific Coast mills depends in large measure upon our producers themselves. Both the Far East and Latin America are capable of consuming greater quantities of paper from this country provided their requirements are fully met and problems of distribution given thorough study with a view to selling in a way acceptable to the trade and in accordance with established custom. These problems can be met and solved without undue difficulty if consistent effort is made to that end.

PACIFIC COAST PAPER IMPORTS AND EXPORTS*—1921-1927

	LOS ANGELES		SAN FRANCISCO		OREGON		WASHINGTON	
	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars
NEWSPRINT, IMPORTS								
1921†	46,114,000	2,467,000	28,967,000	1,463,000	2,282,000	76,000	66,943,000	3,932,000
1922	61,952,000	2,228,000	62,809,000	2,261,000	5,476,000	162,000	45,154,000	1,715,000
1923	104,420,000	3,993,000	110,284,000	4,196,000	4,850,000	163,000	61,459,000	2,433,000
1924	113,737,000	4,231,000	87,939,000	3,290,000	1,453,000	42,000	56,659,000	2,332,000
1925	96,415,000	3,425,000	81,632,000	2,813,000	545,000	16,000	78,242,000	3,103,000
1926	81,171,000	2,707,000	97,002,000	3,206,000	59,000	2,000	97,235,000	3,647,000
1927‡	70,641,000	2,389,000	92,277,000	2,995,000	86,000	3,000	100,079,000	3,650,000
NEWSPRINT, EXPORTS								
1921	40,000	4,000	879,000	58,000	3,315,000	210,000	80,000	3,000
1922	.....	.....	1,245,000	64,000	5,282,000	243,000	579,000	29,000
1923	10,000	600	526,000	30,000	2,833,000	129,000	1,072,000	58,000
1924	17,000	1,000	607,000	46,000	2,487,000	108,000	1,731,000	96,000
1925	18,000	1,000	460,000	23,000	11,914,000	503,000	1,065,000	54,000
1926	14,000	1,000	3,209,000	137,000	12,756,000	583,000	406,000	22,000
1927‡	17,000	1,000	338,000	18,000	6,528,000	268,000	455,000	24,000
BOOK, NOT COATED, IMPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	12,000	800	2,000	200	.....	.....
1923	.....	.....	3,000	400	42,000	2,000	58,000	2,000
1924	931,000	35,000	206,000	8,000	69,000	3,000	.....	.....
1925	387,000	17,000	483,000	24,000	30,000	2,000	37,000	2,000
1926	1,114,000	49,000	638,000	26,000	9,000	500	118,000	7,000
1927‡	707,000	32,000	239,000	10,000	3,000	80	15,000	800
BOOK, NOT COATED, EXPORTS								
1921	.....	.....	178,000	31,000	.....	.....	1,685,000	162,000
1922	400	50	31,000	5,000	2,000	200	2,382,000	173,000
1923	800	130	36,000	5,000	3,000	400	1,513,000	125,000
1924	600	80	526,000	45,000	600	100	549,000	47,000
1925	2,000	400	77,000	8,000	700	400	556,000	47,000
1926	4,000	1,000	499,000	36,000	96,000	5,000	556,000	45,000
1927‡	2,000	200	369,000	29,000	653,000	32,000	1,001,000	73,000
GREASEPROOF, IMPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	12,000	1,000	.....	.....	.....	.....
1923	171,000	12,000	497,000	35,000	35,000	2,000	15,000	800
1924	89,000	5,000	42,000	2,000	13,000	2,000	36,000	2,000
1925	24,000	2,000	24,000	2,000	.....	.....	19,000	900
1926	63,000	4,000	51,000	6,000	.....	.....	12,000	600
1927‡	99,000	6,000	.....	.....	2,000	200	35,000	3,000
GREASEPROOF, EXPORTS								
1921	.....	200	.....	1,000	.....	.....	.....	100
1922	600	50	7,000	1,000	2,000	300	7,000	600
1923	.....	.....	72,000	8,000	.....	.....	16,000	2,000
1924	.....	.....	74,000	5,000	8,000	1,000	4,000	600
1925	2,000	200	91,000	12,000	20,000	2,000	54,000	7,000
1926	800	70	71,000	8,000	41,000	4,000	28,000	4,000
1927‡	.....	.....	245,000	26,000	101,000	10,000	14,000	2,000
KRAFT WRAPPING, IMPORTS								
1921§	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	17,000	2,000	.....	.....	.....	.....
1923§	.....	.....	.....	.....	.....	.....	.....	.....
1924	1,362,000	55,000	570,000	24,000	228,000	10,000	176,000	8,000
1925	263,000	10,000	326,000	14,000	.....	.....	33,000	2,000
1926	112,000	5,000	106,000	5,000	10,000	600	31,000	2,000
1927‡	65,000	1,000	79,000	3,000	12,000	500	.....	.....
KRAFT WRAPPING, EXPORTS								
1921§	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	17,000	2,000	.....	.....	42,000	3,000
1923	8,000	800	34,000	36,000	.....	.....	.....	.....
1924	2,000	200	15,000	1,000	.....	.....	500	60
1925	7,000	500	10,000	1,000	125,000	8,000	6,000	2,000
1926§	.....	.....	.....	.....	.....	.....	.....	.....
1927*	.....	.....	.....	.....	.....	.....	.....	.....
WRAPPING, IMPORTS								
1921	16,000	2,000	31,000	2,000	.....	.....	.....	.....
1922	861,000	53,000	1,594,000	79,000	490,000	27,000	669,000	30,000
1923	2,930,000	142,000	2,416,000	109,000	608,000	30,000	1,266,000	67,000
1924	557,000	21,000	609,000	25,000	56,000	3,000	105,000	4,000
1925	219,000	10,000	12,000	2,000	7,000	200	60,000	3,000
1926	49,000	3,000	9,000	500	2,000	100	56,000	3,000
1927‡	139,000	7,000	39,000	800	.....	.....	.....	.....
WRAPPING, EXPORTS								
1921	11,000	1,000	352,000	34,000	213,000	18,000	113,000	12,000
1922	12,000	2,000	877,000	66,000	139,000	8,000	372,000	20,000
1923	47,000	5,000	560,000	41,000	275,000	15,000	557,000	27,000
1924	31,000	2,000	433,000	32,000	146,000	9,000	669,000	36,000
1925	49,000	4,000	627,000	41,000	1,085,000	58,000	355,000	26,000
1926	82,000	5,000	1,387,000	78,000	1,986,000	109,000	106,000	7,000
1927‡	202,000	16,000	1,050,000	57,000	1,535,000	75,000	112,000	10,000
SURFACE COATED, IMPORTS								
1921	5,000	2,000	10,000	4,000	.....	.....	.....	.....
1922	6,000	2,000	29,000	4,000	.....	.....	.....	.....
1923	2,000	400	154,000	21,000	.....	.....	500	100
1924	2,000	900	235,000	27,000	.....	.....	1,000	800
1925	10,000	2,000	70,000	20,000	.....	.....	600	500
1926	16,000	3,000	118,000	31,000	.....	.....	3,000	200
1927‡	20,000	5,000	96,000	21,000	.....	.....	.....	.....
SURFACE COATED, EXPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	5,000	900	.....	.....	6,000	900
1923	.....	.....	120,000	11,000	.....	.....	6,000	1,000
1924	1,000	70	27,000	2,000	.....	.....	6,000	1,000
1925	5,000	500	117,000	11,000	.....	.....	59,000	5,000
1926	.....	.....	126,000	11,000	18,000	2,000	55,000	6,000
1927‡	.....	.....	170,000	12,000	.....	.....	20,000	3,000

PACIFIC COAST PAPER IMPORTS AND EXPORTS*—1921-1927

	LOS ANGELES		SAN FRANCISCO		OREGON		WASHINGTON	
	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars
TISSUES, IMPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	2,000	700	13,000	6,000	.....	.....	1,000	300
1923	9,000	1,000	21,000	9,000	5,000	2,000	4,000	1,000
1924	1,000	600	22,000	17,000	3,000	700	10,000	2,000
1925	4,000	2,000	42,000	12,000	300	100	4,000	700
1926	4,000	2,000	30,000	9,000	2,000	700	7,000	2,000
1927‡	5,000	3,000	8,000	4,000	3,000	800	5,000	1,000
TISSUES, EXPORTS								
1921	.....	1,000	.....	28,000	.....	.....	.....	15,000
1922	6,000	900	201,000	30,000	.....	.....	196,000	30,000
1923	18,000	2,000	198,000	27,000	800	400	114,000	15,000
1924	29,000	4,000	327,000	37,000	34,000	4,000	248,000	32,000
1925	32,000	4,000	265,000	36,000	.....	.....	254,000	30,000
1926	27,000	3,000	309,000	44,000	.....	.....	157,000	27,000
1927‡	31,000	4,000	255,000	76,000	.....	.....	134,000	19,000
BOXBOARD, EXPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	.....	.....	.....	.....
1923	.....	.....	.....	.....	.....	.....	.....	.....
1924	.....	.....	.....	.....	.....	.....	.....	.....
1925	1,328,000	35,000	4,454,000	206,000	.....	.....	1,129,000	43,000
1926	2,855,000	66,000	11,744,000	325,000	.....	.....	1,971,000	70,000
1927‡	763,000	11,000	8,324,000	260,000	16,000	400	3,283,000	101,000
OTHER PAPER BOARD AND STRAWBOARD, IMPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	.....	.....	.....	.....
1923	300	200	50,000	2,000	.....	.....	.....	.....
1924	119,000	3,000	5,121,000	114,000	.....	.....	100,000	2,000
1925	90,000	2,000	7,830,000	157,000	6,000	300	6,000	200
1926	88,000	1,000	3,112,000	69,000	7,000	500	3,000	400
1927‡	.....	.....	3,120,000	62,000	100	30	3,000	200
OTHER PAPER BOARD AND STRAWBOARD, EXPORTS								
1921	.....	800	.....	110,000	.....	.....	.....	66,000
1922	99,000	5,000	11,891,000	524,000	.....	.....	2,270,000	88,000
1923	5,000	500	12,885,000	503,000	.....	.....	2,578,000	118,000
1924	2,351,000	70,000	15,663,000	509,000	47,000	2,000	1,115,000	46,000
1925	28,000	1,000	916,000	58,000	.....	.....	262,000	17,000
1926	9,000	500	214,000	35,000	100	10	365,000	15,000
1927‡	5,000	200	356,000	26,000	.....	.....	994,000	30,000
PAPER BAGS, EXPORTS								
1921	.....	3,000	.....	23,000	.....	2,000	.....	500
1922	.....	.....	277,000	29,000	35,000	4,000	72,000	7,000
1923	12,000	2,000	222,000	27,000	300	50	133,000	12,000
1924	21,000	2,000	451,000	36,000	.....	.....	31,000	3,000
1925	30,000	3,000	510,000	32,000	47,000	3,000	74,000	5,000
1926	32,000	3,000	755,000	55,000	10,000	800	51,000	4,000
1927‡	24,000	3,000	344,000	27,000	290,000	19,000	21,000	2,000
BOXES AND CARTONS, IMPORTS								
1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	.....	.....	.....	.....
1923	.....	.....	.....	.....	.....	.....	.....	.....
1924	7,000	3,000	25,000	15,000	2,000	1,000	25,000	9,000
1925	4,000	2,000	25,000	13,000	3,000	1,000	61,000	24,000
1926	35,000	10,000	29,000	14,000	3,000	900	84,000	30,000
1927‡	39,000	14,000	18,000	9,000	4,000	1,000	56,000	16,000
BOXES AND CARTONS, EXPORTS								
1921	.....	4,000	.....	33,000	.....	.....	.....	21,000
1922	2,000	200	150,000	18,000	.....	.....	69,000	8,000
1923	1,000	300	89,000	14,000	500	300	12,000	11,000
1924	2,000	500	286,000	77,000	.....	.....	96,000	13,000
1925	2,000	300	197,000	21,000	.....	.....	48,000	7,000
1926	8,000	1,000	275,000	32,000	1,000	100	269,000	21,000
1927‡	7,000	900	87,000	12,000	5,000	1,000	67,000	7,000

*Figures in the tables have been simplified for convenient reference by reduction to the nearest thousand, except in the instance of some small items under one thousand pounds or one thousand dollars.

†Bookprint figures included.

‡1927 items are from January 1 to October 31.

§Amounts included in figures for wrapping paper.

UNITED STATES PULP AND PAPER EXPORTS—1921-1926

Add "000" to all figures for both quantity and dollars

	Unit of Quantity	1921		1922		1923		1924		1925		1926	
		Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars
Pulpwood	M Cords	.....	.....	20	191	8	72	17	157	8	67	13	114
Wood Pulp	M Tons	25	1,755	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sulphite	M Tons	.....	.....	16	809	15	851	21	12,561	23	1,362	21	1,346
Soda	M Tons	.....	.....	3	270	3	287	2	182	2	223	2	133
Other Wood Pulp	M Tons	.....	.....	2	108	3	157	6	603	9	856	8	606
Printing Paper—													
Newsprint	M Pounds	33,624	2,160	51,528	2,338	32,715	1,637	34,317	1,773	45,476	2,025	38,516	1,849
Bookpaper, not Coated	M Pounds	40,185	5,895	29,200	2,829	26,598	3,001	18,582	2,079	17,348	1,935	18,085	1,722
Cover Paper	M Pounds	.....	.....	1,585	225	1,197	210	840	162	1,215	231	1,560	269
Greaseproof	M Pounds	.....	133	1,097	143	1,641	220	1,567	185	2,115	282	2,419	354
Wrapping	M Pounds	26,044	2,294	.....	.....	.....	.....	.....	.....	28,736	2,173	33,015	2,234
Kraft	M Pounds	.....	.....	815	68	873	80	639	73	.....	.....	.....	.....
Other Wrapping	M Pounds	.....	.....	32,237	2,098	25,874	2,097	24,420	1,968	.....	.....	.....	.....
Surface Coated	M Pounds	.....	.....	3,765	565	3,974	606	3,358	506	3,802	562	5,903	745
Tissues	M Pounds	.....	1,080	8,612	1,391	9,209	1,698	8,736	1,526	10,404	1,906	11,702	2,023
Paper Board and Strawboard	M Pounds	.....	2,324	49,087	2,101	56,294	2,678	71,136	2,771	32,375	1,581	40,313	2,030
Paper Bags	M Pounds	.....	847	11,683	1,055	8,741	880	10,414	959	12,881	1,134	11,534	1,024
Boxes and Cartons	M Pounds	.....	1,301	9,366	793	10,879	1,056	13,642	1,180	17,095	1,301	19,866	1,435
Boxboard	M Pounds	.....	.....	.....	.....	.....	.....	.....	.....	22,482	796	52,469	1,502

UNITED STATES PULP AND PAPER IMPORTS—1921-1926

Add "000" to all figures for both quantity and dollars

	Unit of Quantity	1921		1922		1923		1924		1925		1926	
		Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars
Pulpwood—													
Rough	M Cords	243	3,038	225	2,261	375	3,471	268	2,790	321	3,220	367	3,633
Peeled	M Cords	754	10,827	707	7,216	855	8,419	886	8,708	1,019	10,238	928	9,438
Rossed	M Cords	85	1,522	113	1,526	118	1,516	126	1,610	143	1,671	89	1,105
Wood Pulp—													
Mechanically Ground	M Tons	170	5,204	193	5,707	268	9,297	220	7,190	296	8,517	271	8,278
Unbleached Sulphite	M Tons	208	14,149	423	22,297	462	26,548	562	30,082	579	31,542	629	37,032
Bleached Sulphite	M Tons	85	8,948	213	17,996	251	22,246	272	21,006	287	22,528	295	23,678
Soda	M Tons	.....	.....	1	37	5	343	.....	.....	.....	.....	.....	.....
Sulphate (Kraft)	M Tons	155	10,864	276	16,085	234	15,229	278	15,915	306	18,257	335	21,193
Sulphate Bleached	M Tons	4	231	19	1,170	15	1,081	28	1,550	17	990	16	1,049
Other Pulp	M Tons	.....	.....	1	15	1	49	2	125	2	152	4	256
Printing Paper—													
Newsprint	M Pounds	1,585,016	79,125	2,058,536	72,314	2,617,686	98,021	2,714,467	101,297	2,896,850	103,717	3,701,350	123,982
All Other	M Pounds	1,362	197	5,198	320	16,794	831	26,711	1,126	16,611	809	16,376	827
Greaseproof	M Pounds	.....	.....	605	50	3,208	296	1,432	161	2,279	289	2,227	383
Wrapping	M Pounds	11,414	529	65,831	2,734	88,012	3,906	.....	.....	.....	.....	.....	.....
Kraft	M Pounds	.....	.....	.....	.....	.....	.....	28,217	1,090	14,420	606	8,868	391
All Other	M Pounds	.....	.....	.....	.....	.....	.....	21,433	841	5,550	270	5,556	367
Surface Coated	M Pounds	751	198	925	232	1,157	309	1,946	452	1,565	531	2,068	756
Tissues	M Pounds	.....	.....	472	180	2,036	917	2,405	986	2,714	1,164	2,882	1,405
Other Paper Boards	M Pounds	.....	.....	6,103	171	24,801	722	31,497	738	30,358	746	40,222	916
Boxes	M Pounds	.....	.....	.....	.....	.....	.....	1,830	1,179	2,329	1,350	2,104	965

PAPER IMPORTED TO PACIFIC COAST IN 1927

(January 1 to October 31)

Read "thousand" after figures denoting pounds.

	Newsprint		Printing		Greaseproof		Kraft Wrapping	
	Dollars	M Lbs.	Dollars	M Lbs.	Dollars	M Lbs.	Dollars	M Lbs.
To SAN FRANCISCO—								
From Canada	2,278,243	67,946	.....	...	.....	...	.....	...
Sweden	713,566	24,227	9,104	215	.....	...	2,787	67
Norway	3,083	105	999	24	.....	...	.....	...
Latvia	.....	.....	.....	...	.....	...	442	12
To LOS ANGELES—								
From Canada	2,088,091	62,091	.....	...	.....	...	.....	...
Sweden	129,129	2,605	.....	...	3,814	79	753	17
Norway	148,826	5,217	.....	...	.....	...	.....	...
Finland	23,258	728	32,127	707	235	3	227	48
Germany	.....	.....	.....	...	746	8	.....	...
Belgium	.....	.....	.....	...	1,036	9	.....	...
To OREGON—								
From Sweden	166	25	.....	...	.....	...	514	12
Norway	2,387	61	88	3	.....	...	.....	...
Germany	.....	.....	.....	...	219	2	.....	...
To WASHINGTON—								
From Canada	3,650,132	100,079	.....	...	.....	...	.....	...
Sweden	.....	.....	800	15	.....	...	.....	...
Finland	.....	.....	.....	...	841	15	.....	...
Germany	.....	.....	.....	...	2,251	20	.....	...

	Other Wrapping		Surface Coated		Tissues		Paper Boxes	
	Dollars	M Lbs.	Dollars	M Lbs.	Dollars	M Lbs.	Dollars	M Lbs.
To SAN FRANCISCO—								
From Germany	.....	.....	9,668	37	.....	...	4,539	5
France	.....	.....	.....	...	.....	...	1,436	3
United Kingdom	.....	.....	3,964	1	1,864	3	.....	...
Japan	.....	.....	.....	...	1,762	3	3,117	10
China	.....	.....	591	3	.....	...	.....	...
Hongkong	241	27	1,602	5	.....	...	.....	...
Austria	.....	.....	.....	...	495	3	.....	...
Sweden	570	12	.....	...	.....	...	.....	...
Belgium	.....	.....	5,512	50	.....	...	.....	...
To LOS ANGELES—								
From Germany	533	2	4,752	19	.....	...	5,735	18
Sweden	6,246	137	.....	...	.....	...	.....	...
United Kingdom	.....	.....	.....	...	1,602	2	.....	...
Japan	.....	.....	.....	...	1,564	3	.....	...
China	.....	.....	184	1	.....	...	561	1
TO OREGON—								
From Germany	.....	.....	.....	...	832	3	.....	...
Japan	.....	.....	.....	...	.....	...	1,160	4
To WASHINGTON—								
United Kingdom	.....	.....	.....	...	544	1	.....	...
Japan	.....	.....	.....	...	.....	...	15,367	53
China	.....	.....	.....	...	.....	...	738	1
Sweden	.....	.....	.....	...	472	4	.....	...

WOOD PULP IMPORTS TO PACIFIC COAST IN 1927

(January 1 to October 31)

	Mechanically Ground		Unbleached Sulphite		Bleached Sulphite		Unbleached Sulphate		Bleached Sulphate	
	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons
To SAN FRANCISCO—										
From Canada	15,491	663	38,562	797	8,017	218	107,141	2,023	.....	.....
From Sweden	.....	.....	229,311	3,832	.....	.....	39,227	728	.....	.....
From Finland	.....	.....	27,537	900	.....	.....	.....	.....	.....	.....
To LOS ANGELES—										
From Canada	34,992	741	21,383	391	16,427	243	21,108	313	.....	.....
From Sweden	147,476	2,643	209,824	3,582	73,011	1,051	105,084	1,884	70,934	1,084
To OREGON—										
From Sweden	.....	.....	.....	.....	.....	.....	4,963	100	.....	.....
To WASHINGTON*										
From Canada	.....	.....	16,653	381	150,628	2,231	.....	.....	.....	.....

*Washington also imported 2,637 cords of rough pulp wood at a cost of $21,167 and 7,929 cords of peeled pulp wood at a cost of $46,125 from Canada.

PACIFIC COAST PAPER EXPORTS IN 1927

(January 1 to October 31)

Read "thousand" after all figures denoting pounds.

	Newsprint		Book, not Coated		Greaseproof		Wrapping		Surface Coated	
	Dollars	M Pounds	Dollars	M Pounds	Dollars	M Pounds	Dollars	M Pounds	Dollars	M Pounds
From SAN FRANCISCO—										
To Mexico	628	11	508	5	1,253	3	4,264	52	.....	...
Philippine Islands	925	24	435	3	4,065	30	34,951	734	1,006	71
Canada	.....	...	2,089	31	155	2	.....	...	1,870	26
United Kingdom	378	11	.....	...	.....	...	.....	...	.....	...
China	.....	...	3,183	38	7,240	55	416	3	.....	...
Japan	.....	...	504	3	584	3	2,347	39	489	2
Australia	4,521	61	.....	...	11,726	137	2,570	36	7,640	69
New Zealand	.....	...	.....	...	.....	...	4,543	74	.....	...
Hongkong	.....	...	1,727	22	.....	...	.....	...	.....	...
Colombia	150	1	6,209	74	.....	...	960	17	.....	...
Venezuela	.....	...	6,944	102	.....	...	.....	...	.....	...
Brazil	6,594	139	.....	...	.....	...	.....	...	.....	...
Guatemala	.....	...	.....	...	571	4	.....	...	300	2
Salvador	2,492	63	106	1	.....	...	181	2	.....	...
Costa Rica	.....	...	1,378	23	.....	...	1,832	37	.....	...
Panama	.....	...	899	16	.....	...	211	4	.....	...
Cuba	1,834	28	202	3	500	12	.....	...	.....	...
Oceania	45	1	4,353	46	213	1	4,931	53	360	1
Orient	.....	...	314	4	.....	...	.....	...	.....	...
From LOS ANGELES—										
To Mexico	1,025	17	225	2	.....	...	5,254	66	.....	...
Japan	.....	...	.....	...	.....	...	220	2	.....	...
Australia	.....	...	.....	...	.....	...	2,658	38	.....	...
New Zealand	.....	...	.....	...	.....	...	7,364	97	.....	...
From OREGON—										
To Philippine Islands	237,942	5,930	11,670	215	10,067	101	74,558	1,535	.....	...
Japan	2,622	57	.....	...	.....	...	.....	...	.....	...
Australia	2,808	63	371	8	.....	...	.....	...	.....	...
Cuba	17,177	330	908	19	.....	...	.....	...	.....	...
Hongkong	2,249	46	.....	...	.....	...	.....	...	.....	...
New Zealand	2,596	56	.....	...	.....	...	.....	...	.....	...
Brazil	2,313	47	19,338	421	.....	...	.....	...	.....	...
From WASHINGTON—										
To Canada	11,611	263	40,541	523	979	6	5,768	62	1,073	8
Philippine Islands	1,269	11	26,962	398	782	8	741	7	.....	...
China	1,850	80	.....	...	.....	...	3,206	42	1,824	12
Japan	3,670	41	5,880	80	.....	...	.....	...	.....	...
Hongkong	2,859	22	.....	...	.....	...	254	2	.....	...
Orient	37	4	.....	...	.....	...	.....	...	.....	...
Cuba	2,781	35	.....	...	.....	...	.....	...	.....	...

PACIFIC COAST PAPER EXPORTS IN 1927—(Continued)

(January 1 to October 31)

Read "Thousand" after all figures denoting pounds.

	Tissues		Boxboard		Other Paper Board and Strawboard		Paper Bags		Boxes and Cartons	
	Dollars	M Pounds	Dollars	M Pounds	Dollars	M Pounds	Dollars	M Pounds	Dollars	M Pounds
From SAN FRANCISCO—										
To Mexico	888	8	40	1	176	1	2,317	21	.....	...
Philippine Islands	8,088	65	14,077	381	2,491	23	17,376	249	1,339	9
Canada	2,422	21	269	3	1,296	7	1,174	12	2,431	25
United Kingdom	.....	...	.....	...	1,200	6	.....	...	266	2
China	9,194	62	154,796	5,179	7,926	190	157	1	3,544	29
Japan	2,316	8	3,078	112	.....	...	.....	...	205	1
Australia	2,747	9	4,687	150	5,628	59	1,156	10	1,320	3
New Zealand	1,522	6	59,390	1,669	1,610	5	298	3	954	11
Cuba	.....	...	.....	...	180	2	.....	...	.....	...
Oceania	415	2	17,822	638	1,691	12	2,507	35	.....	...
Orient	.....	...	5,339	187	3,522	52	391	4	.....	...
Hongkong	1,110	8	.....	...	.....	...	.....	...	400	2
Austria	44,892	48	.....	...	.....	...	.....	...	.....	...
Colombia	123	1	.....	...	.....	...	.....	...	.....	...
Chile	200	2	.....	...	.....	...	.....	...	.....	...
Guatemala	575	4	.....	...	.....	...	529	5	.....	...
Honduras	.....	...	.....	...	.....	...	265	1	.....	...
Salvador	457	3	152	4	.....	...	209	2	1,582	6
Nicaragua	959	9	.....	...	.....	...	427	2	.....	...
Panama	.....	...	.....	...	.....	...	.....	...	86	1
From LOS ANGELES—										
To Mexico	3,872	31	5,794	562	224	5	1,357	15	852	7
Canada	.....	...	.....	...	.....	...	1,754	19	.....	...
China	.....	...	5,001	201	.....	...	.....	...	.....	...
From OREGON—										
To Philippine Islands	.....	...	350	16	.....	...	17,110	275	.....	...
China	.....	...	.....	...	.....	...	897	14	1,280	5
Hongkong	.....	...	.....	...	.....	...	95	1	.....	...
From WASHINGTON—										
To Canada	14,575	100	79,281	2,483	13,368	415	2,059	21	4,485	53
Philippine Islands	2,632	27	.....	...	.....	...	.....	...	2,367	14
China	.....	...	21,638	800	12,322	561	.....	...	.....	...
Japan	1,936	7	.....	...	4,376	17	.....	...	.....	...
Hongkong	.....	...	.....	...	127	2	.....	...	.....	...

PULP WOOD IMPORTED INTO WASHINGTON*—1921-1927

	Rough		Peeled		Rossed	
	Cords	Dollars	Cords	Dollars	Cords	Dollars
1921	11,923	74,339	512	2,454	.....	.....
1922	6,238	37,388	1,395	8,857	43	189
1923	15,996	89,590	3,968	26,963	108	561
1924	9,298	83,739	18,257	179,347	209	3,111
1925	6,496	61,390	17,064	140,043	284	2,937
1926	2,826	26,510	13,438	89,310	125	1,375
1927†	2,637	21,167	7,929	46,125	.....	.....

*No pulpwood was entered at the other Pacific Coast customs districts.
†Figures for 1927 include movements from January 1 to October 31.

PULP IMPORTS AND EXPORTS TO AND FROM THE PACIFIC COAST—1921-1927

IMPORTS

Mechanically Ground

	Los Angeles		San Francisco		Oregon		Washington	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1921	.....	.....	635	15,793	.....	.....	500	27,596
1922	620	40,884	.....	.....	.....	.....	238	8,389
1923	731	33,200	727	13,157	.....	.....	111	5,988
1924	871	36,765	1,780	43,327	.....	.....	94	4,310
1925	200	6,635	1,374	40,164	.....	.....	.....	.....
1926	2,212	130,085	1,166	36,652	1,214	47,590	5,056	102,515
1927*	3,384	182,468	663	15,491	.....	.....	.....	.....

Unbleached Sulphite

1921	840	62,328	261	10,043	.....	.....	2,443	145,778
1922	1,716	95,702	1,298	54,267	.....	.....	3,712	171,482
1923	2,600	168,107	3,664	216,785	.....	.....	10,250	529,643
1924	807	90,285	4,323	211,953	.....	.....	2,010	104,885
1925	1,805	103,040	2,031	87,384	180	11,219	991	59,090
1926	620	36,974	5,070	265,360	.....	.....	3,594	207,847
1927*	3,973	231,207	.....	.....	.....	.....	.....	.....

Bleached Sulphite

1921	49	5,446	75	8,506	.....	.....	215	28,375
1922	98	7,348	1,616	102,774	.....	.....	820	64,075
1923	100	9,125	1,533	120,423	.....	.....	1,461	117,660
1924	500	28,482	828	49,534	.....	.....	784	52,228
1925	995	55,094	2,053	116,678	1,500	98,913	1,270	88,380
1926	3,755	233,930	3,514	180,472	.....	.....	2,695	163,481
1927*	1,294	89,438	218	8,017	.....	.....	2,231	150,628

Unbleached Sulphate

1921	.....	.....	.....	.....	.....	.....	2,014	191,432
1922	.....	.....	3,290	163,824	2,075	134,750	2,007	132,979
1923	598	40,751	2,714	161,714	5,413	398,743	210	9,772
1924	600	34,009	2,548	148,617	7,123	452,335	34	2,207
1925	3,719	217,312	2,965	147,366	9,075	554,796	.....	.....
1926	545	34,011	4,043	224,731	3,653	225,177	.....	.....
1927*	2,197	126,192	2,751	146,368	100	4,963	.....	.....

Bleached Sulphate

1921	.....	.....	90	5,178	.....	.....	.....	.....
1922	.....	.....	300	22,428	.....	.....	.....	.....
1923	.....	.....	.....	.....	.....	.....	.....	.....
1924	.....	.....	275	14,462	576	25,967	45	2,945
1925	336	18,201	28	824	.....	.....	.....	.....
1926	562	32,451	.....	.....	716	44,082	.....	.....
1927*	1,084	70,934	.....	.....	.....	.....	.....	.....

Other Wood Pulp

1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	.....	.....	.....	.....
1923	100	9,036	276	5,745	.....	.....	.....	.....
1924	.....	.....	.....	.....	.....	.....	.....	.....
1925	25	3,657	.....	.....	.....	.....	94	6,505
1925	75	3,657	.....	.....	.....	.....	94	6,505
1926	204	5,203	.....	.....	.....	.....	.....	.....
1927*	.....	.....	.....	.....	.....	.....	.....	.....

EXPORTS

Other Wood Pulp

1921	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	.....	.....	3	359
1923	.....	.....	.....	.....	1,000	23,000	59	2,337
1924	.....	.....	56	2,798	.....	.....	1	45
1925	.....	.....	38	1,080	.....	.....	2	123
1926	1	81	19	538	.....	.....	3	150
1927*	.....	.....	4	104	.....	.....	658	11,442

*Figures for 1927 include movements from January 1 through October 31.

†Exports of pulp during this period were small. Oregon exported one ton of unbleached sulphite at $43 in 1926 and 45 tons at $2,100 in 1927. Washington, in 1927, exported 54 tons of unbleached sulphite at $3,450. Of soda pulp, 353 tons at $30,312 in 1925 and 250 tons at $20,922 in 1927 were moved out of the San Francisco customs district.

The World's Chief Exporters of Wood Pulp—Figures for 1926

	Chemical Pulp. Pounds.	Mechanical Pulp. Pounds.	Total Wood Pulp. Pounds.
Sweden	2,187,868,200	827,274,200	3,015,142,400
Canada	1,202,324,800	720,409,800	1,922,734,600
Norway	521,995,400	331,778,200	1,839,784,600
Finland	666,485,600	243,170,500	909,656,100
Germany	386,874,300	12,750,400	399,624,700
Czechoslovakia	.....	.....	162,702,800
United States	56,291,200	19,698,600	75,989,800
Newfoundland	.....	28,472,600	28,472,600

INTERCOASTAL WATER BORNE SHIPMENTS OF PAPER*—1925

EASTBOUND

(In cargo tons of 2,240 pounds)

Shipments To:	From— San Diego	Los Angeles	San Francisco	Portland	Seattle	Tacoma	Total
Boston, Mass.	204	5,674	2,562	53	6	.....	8,499
New York, N. Y.	.....	271	3,164	4,191	952	10	8,590
Philadelphia, Pa.	.....	48	431	1,005	242	185	1,911
Jacksonville, Fla.	.....	.....	.....	225	517	.....	742
Mobile, Ala.	.....	.....	.....	14	180	.....	194
New Orleans, La.	.....	2,408	1,668	349	1,622	.....	6,047
Galveston, Texas	.....	.....	.....	13	1,236	.....	1,249
Houston, Texas	.....	.....	222	142	1,983	.....	2,347
Total							29,581‡

WESTBOUND

Shipments From:	To— San Diego	Los Angeles	San Francisco	Portland	Seattle	Tacoma	Total
Portland, Me.	35	2,720	1,282	1	323	34	4,415
Boston, Mass.	.....	4,283	9,967	724	644	73	15,691
New York, N. Y.	382	8,447	15,102	2,201	2,496	135	29,308
Newark, N. J.	.....	1,665	1,040	.....	.....	.....	2,705
Philadelphia, Pa.	41	3,117	4,699	595	724	50	9,226
Baltimore, Md.	12	2,281	1,645	245	171	11	4,383
Savanah, Ga.	.....	143	304	.....	.....	.....	447
Mobile, Ala.	.....	46	89	45	40	.....	220
New Orleans, La.	.....	653	767	286	122	65	1,893
Total							68,869§

Statistics from the U. S. Shipping Board, Bureau of Research, Division of Statistics.
*Includes all commodities taking general classification of "paper."
‡Includes 2 tons from Everett.
§Includes 581 tons to Longview, Bellingham and Everett.

INTERCOASTAL WATER BORNE SHIPMENTS OF PAPER*—1926

EASTBOUND

(In cargo tons of 2,240 pounds)

Shipments To:	From— San Diego	Los Angeles	San Francisco	Portland	Seattle	Tacoma	Total
Boston, Mass.	246	6,601	2,757	772	58	.....	10,434
New York, N.Y.	.....	1,168	3,048	5,200	327	33	9,776
Philadephia, Pa.	.....	90	1,260	661	291	.....	2,302
New Orleans, La.	.....	155	420	215	31	27	849
Houston, Texas	.....	.....	77	209	4,396	551	5,233
Total							28,594

WESTBOUND

Shipments From:	To— San Diego	Los Angeles	San Francisco	Portland	Seattle	Tacoma	Total
Portland, Me.	.....	5,042	4,331	42	850	.....	10,265
Boston, Mass.	.....	6,334	11,862	1,775	1,016	1	20,988
New York, N. Y.	394	12,406	19,628	2,668	2,478	175	37,791
Newark, N. J.	.....	4,919	3,347	.....	.....	.....	8,266
Philadelphia, Pa.	86	3,916	3,925	616	598	94	9,235
Baltimore, Md.	11	698	2,225	151	328	.....	3,474
New Orleans, La.	.....	1,369	1,497	411	346	47	3,670
Total							93,792‡

Statistics from the U. S. Shipping Board, Bureau of Research, Division of Statistics.
*Includes all commodities taking general classification of "paper."
‡Includes 103 tons to Everett and Bellingham.

Aerial Photo by Navy Dept.

The Hemlock-Spruce Forests of Southeastern Alaska Are Everywhere Accessible Through Protected, Navigable Waterways

Alaska and the Paper Industry

The Northern Territory Sees the Dawn of a New Development

By B. F. HEINTZLEMAN
U. S. Forest Service, Alaska District.

THE remarkable expansion now taking place in certain branches of the pulp and paper industry on the Columbia River and around Puget Sound has focused attention on the paper making possibilities of the Pacific Coast as a whole. This leads naturally to an inquiry as to what place Alaska is likely to fill in the industry and when development there may be expected. It will be remembered that the great paper making region of the Coast, with its vast supplies of hemlock, spruce and true firs, so essential for mechanical and sulphite pulp, covers not only Western Oregon, Washington and British Columbia, but extends farther northward for 400 miles over the mainland strip and hundreds of adjacent islands that comprise Southeastern Alaska.

The installations now being made in the Pacific Northwest and to some extent in Southern British Columbia consist largely of plants manufacturing sulphite pulp, sulphate pulp, board and kraft and other grades of paper aside from newsprint.

Lumber or Pulp

This development is taking place in centers of lumber production and can be considered as complementary to the lumber industry. Lumber is the principal consideration. But the pulp mill converts into a valuable product the material encountered in the woods and the sawmill that has little or no lumber value and was formerly left on the ground or went to the refuse burner. This type of pulp and paper development is of inestimable value to the great lumber producing sections of the Coast and to the nation as a whole. Undoubtedly it is capable of much greater expansion and in time will make the Pacific Northwest and Southern British Columbia one of the largest paper producing regions on the continent.

It is the opinion of the writer, however, that these sections where "Lumber is King" will not share extensively in a further expansion of the newsprint industry on the Pacific Coast. This industry needs a different form of "setup" and will probably find conditions more to its liking in Northern British Columbia and Southeastern Alaska. The latter may be favored over British Columbia as the United States represents the great market for newsprint, and paper from Alaska will not be subject to possible future import or export duties, embargoes, or other artificial obstructions that can be placed between the mill and the market, where international boundaries have to be crossed.

Tremendous Plants

The present-day tendency is to make newsprint in mills of larger and larger size and the latest plants have capacities of 400 to 600 tons per day. They represent tremendous investments, $15,000,000 to $25,000,000 each, and can only be justified when backed up by huge timber holdings assuring an adequate supply of wood indefinitely, or at least for a very long period, say 50 years. These large plants have so far been confined almost entirely to Canada, where cheap pulp timber in immense quantities has been available and where the policy of the provinces has been to allot the required large reserves to the mills under a form of license calling for payment as cutting proceeds. It

follows that if Pacific Coast newsprint is to compete on a large scale in the general markets with the output of these large Eastern Canadian concerns, it must likewise be manufactured in large plants to get the benefit of equally low manufacturing costs. The Coast mills will need the backing of the same huge timber supplies, and these supplies must be available on a basis that will give reasonable wood costs.

It is believed that in Oregon, Washington, and Southern British Columbia the opportunity is very limited for paper mills, of say 500-ton daily capacity, to acquire loggable blocks of timber of five billion board feet each, 50-year supply, at a figure which they can afford to pay. The sawmills would offer great competition for this timber and the cost would be based on its value for lumber and not for newsprint. Again, if acquired at present-day figures, the investment in the timber reserves would be so increased during the long operating period by carrying charges in the form of interest, taxes, fire protection and fire losses that the wood costs would become excessive in comparison with those of the Canadian newsprint mills. The presence of non-pulping species, such as Douglas fir, in the holdings would materially increase the total amount of timber that would have to be carried.

Competition for Logs

A 500-ton newsprint mill is not likely to be established in the important lumber producing sections of the Coast on the basis of buying logs in the open market, as too great risks are involved in view of the heavy plant investment. Competition for logs with the sawmills and with smaller paper mills producing higher grade paper is bound to increase as time goes on and to extend to logs of poorer and poorer grade. The cost of logs fluctuates widely with the lumber demand; spruce, which must be used in a certain ratio to other woods if Coast newsprint is to compete on quality and manufacturing cost in the general markets, is quite limited in quantity in the Pacific Northwest and Southern British Columbia, and finds a ready and rapidly increasing sale as sawlogs. Lastly, as the pulping species largely grow in mixture with Douglas fir and cedar, which are valueless for newsprint but important lumber trees, a period of depression in the lumber market might occasion such a shut-down of logging camps as to endanger seriously the supply of pulpwood.

Mechanical Pulp Mill of the Alaska Pulp & Paper Company at Speel Inlet, Alaska's Only Pulp Mill Today, But a Forerunner of a Future Industry of Great Proportions

B. F. HEINTZLEMAN

Southeastern Alaska is believed to offer a much poorer field for the sulphite and sulphate pulp mills and the board and high grade paper mills than Oregon, Washington and Southern British Columbia, due to the lack of a large supply of waste from logging operations and sawmills, and the disadvantages to a comparatively small industrial project that would come from Alaska's more isolated location. On the other hand, the writer believes that Alaska offers the better location for large modern newsprint mills, that conditions under which the industry will operate in that region place the mills on a more favorable competitive basis with those of Eastern Canada than is possible in any other section of the Pacific Coast and in consequence that a material expansion of this industry on the Coast will be centered first in Alaska.

Timber Reserves

As stated previously, it is doubtful if the modern, large newsprint plant could afford to purchase and carry the timber reserves its huge plant investment requires, so long as the Canadian mills are assured of a sustained supply of wood from provincial government land under a form of license which largely eliminates an initial purchase price and a carrying charge and calls for payment of the timber only as cut. In Alaska, where the federal government owns all of the pulpwood forests, the same general system of timber disposal can and is to be followed. Extensive pulpwood allotments sufficient to supply very large mills in perpetuity are blocked out around large water power sites that are valuable for paper mill use. Within these allotments it is planned to make successive long-term sales of timber covering as long periods as 50 years each, the material to be paid for as cutting proceeds. Stumpage prices will be readjusted at intervals throughout the life of the contract, as in Canada, to cover broad fluctuations in the value of standing timber.

This region will never have the large competing sawmill industry that is now found in the more southerly

At Tease Lake, Source of Power for the Alaska Pulp & Paper Company, 10,000 Mechanical Horsepower Can Be Developed. Alaska Has Many Potential Hydro-electric Developments

region. Douglas fir, the great lumber tree of the Coast, does not extend this far north and the forests are almost exclusively of the two pulping species, hemlock and spruce. Again, the hemlock and spruce found here do not, in the main, form the large trees and consequently produce the clear stock that gives the same species farther south a good lumber value. Their chief value is for pulpwood use and the federal government intends to manage them on a pulpwood basis.

The spruce needed in large quantity by Coast newsprint mills is more available to the industry in Alaska than elsewhere over this entire papermaking region. Not only will sawmill competition for it be small, but the total amount of spruce available in Southeastern Alaska, conservatively estimated at 16 billion board feet, is larger than the stand of Oregon and Washington combined and also larger than the total stand on the Coast section of British Columbia.

Cheap Wood for News Print

Alaska in the long run, and very likely at present, will be able to furnish cheaper wood for newsprint mills than the Pacific Northwest. Aside from the fact of little outside competition for logs and no carrying charges on timberlands, logging costs will be cheaper. Southeastern Alaska, with its numerous bays, inlets, channels and canals, has 9,000 miles of shoreline along which the pulp-timber occurs as a narrow fringe. Seventy-five per cent of the pulpwood lies within two and one-half miles of tidewater. It is thus readily accessible and can be cheaply logged to the shoreline and towed through the protected waterways to the mill. Regardless of the number of years logged the timberline cannot recede far inland. In Oregon and Washington the greater part of the pulp timber occurs on the upper slopes of the mountains and can be reached only by long, expensive logging railroads.

Federal Forests

The forests in Southeastern Alaska can maintain an extensive newsprint industry, and as these forests are to be managed by the federal government for the continuous production of forest crops, there is an excellent opportunity here for the development of a great newsprint production region that will be an outstanding factor in supplying the needs of the United States for all time. The estimated timber stand is placed at 80 billion board feet and the airplane surveys of the region made in 1926 and the extensive ground work on the timber reconnaissance of the past few years show this estimate to be very conservative. Not less than 75 per cent of the timber is western hemlock and 20 per cent Sitka spruce. Using a period of forest crop rotation as high as 90 years, 1,500,000 cords of wood can be harvested annually. This is sufficient for 1,000,000 tons of newsprint.

Alaska has excellent water power resources to supply the heavy power demands of newsprint manufacture which, for a 500-ton paper mill, amount to about 50,000 horse power. The power sites lend themselves to a simple type of development for industrial use and the power costs will compare very satisfactorily with those in any other paper producing region.

Equitable Climate

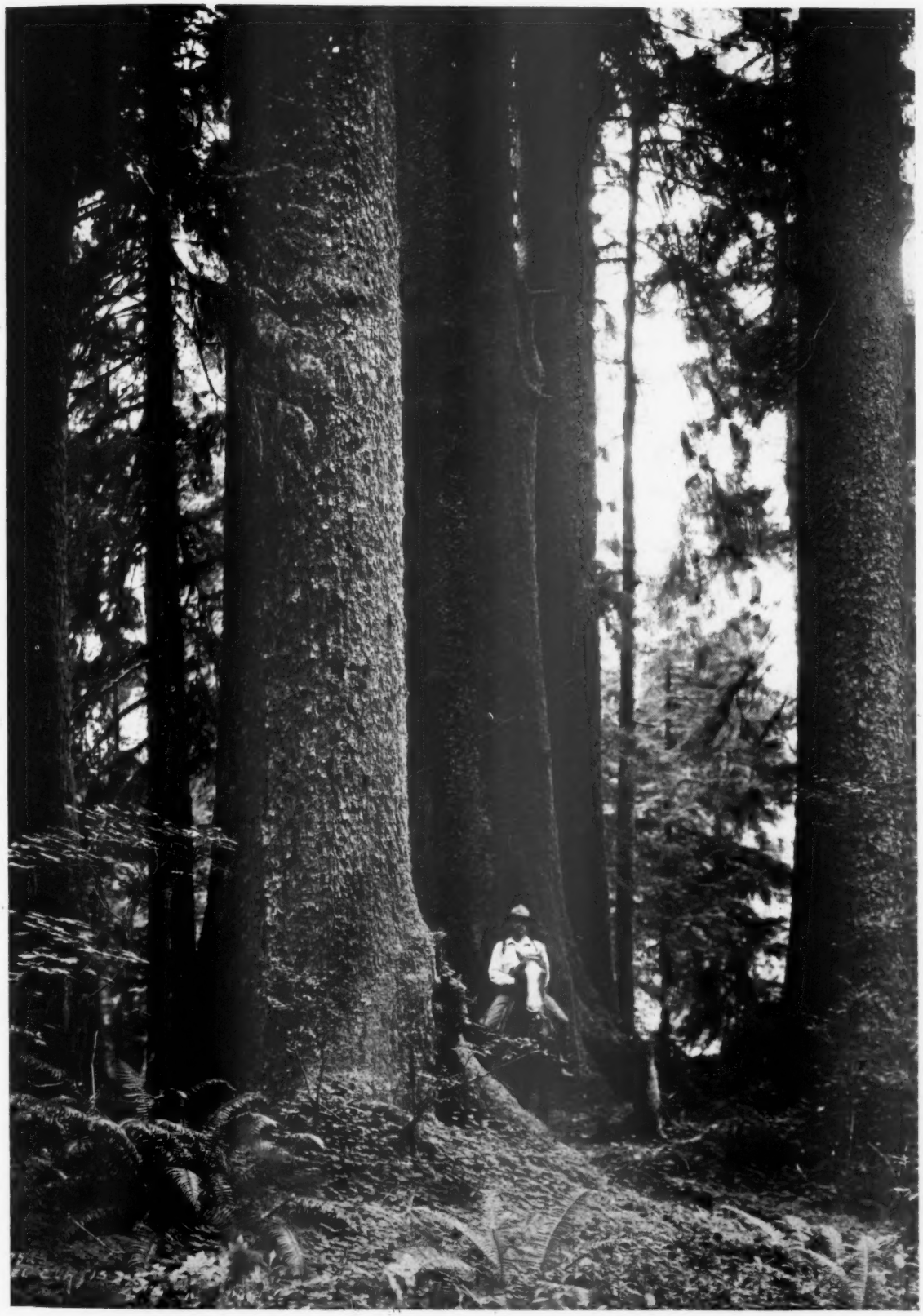
The climate, of course, offers no obstacles to year-long plant operation or shipping. The logging season in general extends over eight or nine months and in many sheltered locations practically throughout the year.

Southeastern Alaska lies from 600 to 900 miles northwest of Seattle. This distance would be an important factor in making less than full cargo shipments of pulp or paper from moderate-sized plants, but the freight differential due to this extra distance on full cargo shipments of newsprint moving regularly to the general markets of Eastern United States and other distant points, would be small, and could easily be counterbalanced by favorable features offered by Alaska.

Early Development

The interest that has grown up in the past two years in the Alaskan possibilities among responsible concerns indicates an early start of the newsprint industry there. Near the close of last year, five parties, following extensive engineering investigations in this field, applied to the Forest Service and the Federal Power Commission for preliminary timber and power awards, two projects being involved in the five applications. The timber was advertised for sale, two bids being received on one project and one on the other project. The timber sales, and subsequently the water power, were awarded by the government to the highest bidders on the timber. In the case of the first project, located at Ketchikan, the successful bidders were Isadore and J. D. Zellerbach, of the Zellerbach Paper Corporation, San Francisco. The second project, located at Juneau, was awarded to George T. Cameron, publisher of the San Francisco Chronicle, acting on behalf of himself and of another large Pacific Coast publisher. In each case a period extending to June 30, 1929, is named for the making of surveys and investigations, selection of specific timber units to comprise the sale areas, and for the formulation of complete plans for the development of the project. If the set-up is approved on the above date construction work must be started within a reasonable time thereafter and a newsprint plant of not less than 200 tons daily capacity must be in operation by April 1, 1932. This capacity is to be increased to a minimum of 400 tons prior to 1942.

The necessary preliminary field investigations were started immediately after the awards of power and timber and are still in progress. It is thought that detailed and intensive work on the plans and surveys for both projects will begin early next spring.



Much Sitka Spruce is to Be Found on the Timbered Shores of Alaska's Mainland and Islands

J. L. MURRAY

N. D. HOPKINSON

JAMES DAVIS

Association Work in the Trade

By M. R. HIGGINS

President, Pacific States Paper Trade Association.

OFFICERS OF THE PACIFIC STATES PAPER TRADE ASSOCIATION

President	M. R. Higgins	Zellerbach Paper Co., San Francisco
Exec. Vice-President	J. L. Murray	Mutual Paper Corp., Seattle
Vice-President	D. M. Woodward	John W. Graham Co., Spokane
Vice-President	James Davis	Zellerbach Paper Co., Sacramento
Vice-President	N. D. Hopkinson	Blake, Moffitt & Towne, San Francisco
Vice-President	Wm. E. Taverner	Taverner & Fricke, Los Angeles
Secretary-Treasurer	Charles Kahn	San Francisco

TRADE associations generally, through the house-cleaning they gave themselves some years ago and through recognition of their merits and meritorious operations of late years by the public, by business and by government officials, have assumed a definite position in the commercial life of the country.

They came into being early to act against actual or conceived unfair conditions. They developed a defensive force which in some instances crossed the line of protection and exerted an influence that was baneful. Legislation against this condition failed to correct it entirely, but public opinion, differentiating between what was beneficial and what was baneful, recognized the former and naturally the latter disappeared. This same public opinion frowned upon official persecution, which in many instances was substituted for prosecution, so that even government officials have assumed a saner attitude toward trade associations and in many high places in government their present activities are particularly endorsed and encouraged.

In most of the cities of this Coast, there exist local paper trade associations which are members of the Pacific States Paper Trade Association, which in turn is a member of the National Paper Trade Association. The principles of the latter association which are expressed in the adopted code of ethics and which, of course, is also the code of ethics for the local associations, are as follows:

"1. I will act honorably in my business of paper merchant, and conform in all things to the highest standards in the industrial world, so that my business shall be worthy of my devotion and ideals.

"2. I will conduct my business so that it shall compel the respect and confidence of all who trade with me.

"3. I will not bear false witness against my fellow merchant and competitor, nor belittle him, nor impugn his honor, nor covet his success.

"4. I will deal fairly and courteously with customers, neither misleading them by false promises, nor misusing the confidence which I gain.

"5. I will seek the co-operation and good will of the manufacturers, and by treating them with fairness and by fulfilling my obligations to them, gain their faith and trust.

"6. I will be just to my employes, seek to earn their respect and loyalty and inspire them to the practice of these principles.

"7. I will conform to trade customs that are honorable, and keep faith with my trade associations when their principles are constructive and tend to the advancement of the paper industry.

"8. I will do unto others as I would they would do unto me, for by my deeds will I elevate all business practices."

Association Aided Government

During the great war the National Association was one of the active forces in aiding the federal government in its campaign for consolidation of activities, standardization of weights and measures, stabilization of processes for the purpose of conserving the raw materials of the nation and the elimination of waste in every way possible. The Pacific States Paper Trade Association was brought into existence at that time as it had no other way of contact with the government or its officials except through the National Association.

When the crash came in 1920, it found the paper merchant in common with all other distributors totally at sea regarding the future conduct of business. From seller's market over night we went into a buyer's market; from a supposed scarcity of goods to an actual surplus; from underproduction to overproduction, which demoralized the paper markets so that merchandising became extremely hazardous. It became necessary to revise and reestablish our entire methods of doing business. It became necessary to ascertain accur-

CHARLES KAHN

WM. E. TAVERNER

D. M. WOODWARD

ately the cost of doing business because the runaway methods pursued during the war were not adaptable to the conditions.

No individual endeavors, methods, or ideas could be conclusive as there was no contact with others in the same line of business and therefore no comparison of experiences. This work was done by the National Association and was conducted in a scientific manner over a period of several years, resulting in a general knowledge of those costs being disseminated from the National Association. Methods pursued were scientific, accurate and conclusive. Their dissemination and use were entirely legal, laudable, and desirable and were approved by the government officials coming in contact with trade associations.

Know the Cost

A merchant who takes the great hazard of merchandising is entitled to know and, if successful, must know what the costs of doing business are, what the state of trade is, how production and distribution compare, how transportation affects his business and what weight to give to the united experience of merchants in the ever-recurring cost of distribution and especially of the cost of service and such details as auto delivery. Further information in regard to credits, discounts, mill customs are effectively treated and disseminated. By this knowledge, the cost of doing business may be minimized. Through this information, economies may be set in motion. All these are in the interest of the purchasing public, for the lower the cost of doing business, the less price can be charged for merchandise. If we can eliminate all wasteful operations, stabilize all our activities through reliable knowledge of all the elements of expense, we can pass the saving on to our customers beyond a rightful, reasonable profit to ourselves.

The Paper Trade in Northern California

THE 1928 New Year wish of the San Francisco members of the Pacific States Paper Trade Association, was, according to one member of the group, that the year would be one of sound merchandising, with the paper mills confining the outlets for their products to established paper jobbers and distributors.

During 1927 there was an increase in the supply of paper on account of additions to existing paper mills and construction of new mills, according to San Francisco members. This extra production, it has been claimed, added to the load being carried by the jobbers and their troubles, too, were increased by the fact that many persons not in the distributing business attempted to function as distributors. "Unethical competition," it was called.

The San Francisco members of the paper trade association during 1927 cooperated with the members in other cities of the state in adopting the "1,000-sheet plan" of counting paper and in increasing the use and popularity of the carton for packing paper.

The San Francisco members also took a leading part in the 1927 convention held at Del Monte in May and already are making plans for the 1928 convention at the same place.

No special gatherings were held by the San Francisco group during the year, but each day there has been a "Paper table" at lunch at the San Francisco Commercial Club, at which gathered representatives of the jobbers and the mills.

Denver Trade Expects Better 1928

By ERNEST B. ERSKINE
Manager, Butler Paper Co., Denver.

RECORDS so far available would indicate that the demand for paper and paper products in Denver territory during 1927 was slightly less than in 1926. However, the year was one of advancement for the paper merchants through the establishment of better merchandising practices which have resulted in improved merchandising conditions and consequently in larger margins of gross profit.

ERNEST B. ERSKINE

Probably the most important development was the preparation of a suggested scientific mark-up for coarse papers, paper bags, twine and other miscellaneous paper products. This mark-up is followed very closely by the leading paper merchants and it seems

certain that in time it will be adopted by all merchants and by the wholesale grocers as well.

In printing papers the year was marked by the successful establishment of higher prices on broken packages and on small units. Many of the merchants have added to their stocks new and attractive items which have been well received by the trade. Report of the Master Printers of Colorado indicates that Denver printers have operated during the year at an average capacity of 75 per cent.

It is evident there has been some curtailment in the purchase of printed matter and advertising and it is the feeling that a good portion of these purchases have simply been deferred and will result in increased business during the coming year. The seasonal upturn in business in the autumn has been most decided and autumn business in practically all lines exceeded business of the same period of 1926. Basic conditions throughout the territory are now very satisfactory and a general expansion of trade is expected during 1928.

Paper Trade In British Columbia

By CHARLES J. KAY

Manager Columbia Paper Co., Vancouver, B. C.
Chairman, B. C. Section, Canadian Paper Trade Association

THE paper trade in British Columbia has just passed through a good year, significant in growing demand and stabilized prices, and another year just as satisfactory is in prospect.

The year 1927 was a normal year—a year without striking incident, so far as the paper business is concerned. But if there has been any dominant note in the trade's activity, it has been progress—nothing sensational or startling, but steady and consistent, and indicative of the fact that conditions are on a sound basis.

CHARLES J. KAY

Most of the wholesale paper business is handled by four houses with headquarters in Vancouver: Smith, Davidson & Wright, which was established some twenty years ago; the Columbia Paper Company, three years later; Barber-Ellis, a branch of the big Toronto house, and the Coast Paper Co., a comparatively young concern, organized three years ago. The volume of business done by these companies during the past year has shown a healthy increase. Sales reached peak in 1920, but that year should not be regarded as a criterion, since conditions all over the country were abnormal and prices were extremely erratic.

Paper may be regarded as a true index of prosperity. Newsprint, of course, is the key line. If newsprint consumption advances, then the whole paper market follows along in its wake, and it has been shown that the annual increase in the consumption of newsprint averages about seven and one-half percent. My opinion is that this situation is due to two main factors: 1. The increasing size of newspapers and their gains in circulation. 2. The gradual assimilation of foreign-born and their adoption of the English-language newspaper. It is interesting to know that nowhere else in Canada has the increase in paper consumption, on the basis of population, been more marked than in British Columbia.

As a matter of fact, the paper trade in British Columbia is rather unique. Our market is Canada west of the Rockies and that market we now have pretty well to ourselves. As a result of giving good service, the British Columbia houses now virtually monopolize the trade within their selling area, and direct competition from the East, which was so severe in former years, is now practically non-existent.

Another unique feature about the British Columbia business is that the firms operating in this field must be pretty well self-contained. That is to say, they have to be independent so far as stocks are concerned. Most of our paper stocks, except in newsprint and wrapping paper, come from the eastern mills; it is necessary for us to anticipate the demand by months rather than by days, as is the case in the East. In Toronto, for instance, if a paper merchant runs out of a certain line, he can replenish it in a couple of days. But out here, placing orders and getting delivery are processes that involve months rather than days. Because of our distance from the main source of supply we have to carry heavy stocks and that in turn means better service to buyers, because they have a much wider selection. On a pro rata basis, investment in paper stocks is larger in British Columbia than anywhere else in Canada.

Prices have been satisfactory, but I look for a decline in prices rather than an increase. The factor that will dictate that is whether or not the paper mills are able to pick up the slack; that is to say, overcome the present over-production that is so apparent in the East. Unless consumption is brought up to within closer proximity to producing capacity in the East, low prices will rule. I do not look for an ideal condition for a good many months.

Among the recent developments in the paper trade in British Columbia may be included the growing use of waxed paper, which finds its chief sale in the Okanogan and other fruit-growing districts. The Westminster Paper Co. at New Westminster installed a waxing machine during the past year and it has found a very good market for its product. This concern, which is a pioneer in the manufacturing of tissue papers in this province, has had an exceedingly successful year and its exports to New Zealand and Australia have been very fair. The prairie markets are also buying on the Coast. The Pacific Mills, Ltd., has a wrapping plant and this, too, caters to the fruit industry on a large scale. A few years ago all this business was in the hand of eastern merchants.

Rapid Improvement in Paper Making

Today's paper machines are a far cry from those of last century. In terms of square feet of paper, based on Beloit Iron Works figures, their best machine in 1858 and the latest in 1927 produced as follows:

	1858.	1927.
Width of sheet in inches	42	234
Speed of machine in feet per min.	75	1,200
Paper produced (in square feet):		
Per minute	262.5	23,400
Per hour	15,750	1,404,000
Per 24-hour day	378,000	33,696,000

The Bagley & Sewall Co., is now manufacturing a machine for Canadian installation which will have a width of 304 inches.

Pulp *Paper*

SELLING AGENTS

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250 Park Avenue (Cor. 46th Street) New York

Paper Trade In Washington

By C. H. BECKWITH
Pacific Coast Manager, Carter, Rice & Co., Corp.

PAPER merchants of Seattle and Tacoma, despite the separation of the two cities, met frequently during the year at luncheon or dinner to discuss mutual problems of the trade, and all feel that they have profited from these meetings. Among other things accomplished were: The introduction of complete sample cases for printing papers, adoption of the "1000-sheet count", and introduction of the carton pack for fine papers.

C. H. BECKWITH

Adoption of the 1000-sheet count places paper counting upon a consistent basis from the time it leaves the manufacturer to the time it reaches the consumer. The principle had been adopted by printers a long time ago, and its adoption by the jobber was logical.

The carton pack is far from being in universal use as a paper container, but its use has grown greatly during the past year. Sentiment toward it cannot be said to have crystallized in this district. The opinion of each user varies according to his own experience.

The past year saw a great effort on the part of eastern paper-makers to place their wares upon western markets, particularly in the field of high grade paper. Eastern mills, with greater opportunities for fancy finish and new tints together with their proximity to the rag markets, dominate the real fine paper field.

Our problem during 1928 has been to keep expenses down. Although the volume of business done is generally increasing, jobbing profits are falling off. We sometimes question the place of the jobber in the paper marketing, but as long as we have production, we must have distribution, and this place the jobber fills.

If the small order situation grows worse during the coming year paper dealers will probably be forced to unite in placing a delivery charge upon all orders under a minimum, allowing the small buyer the alternative of calling for his own order.

The general trend of business during 1927 was good for the first half-year, with a slump toward autumn, and a recovery during December. Indications are good for a prosperous year in the paper trade during 1928, with a possible slump at election time.

Rayon Silk Production Increasing

Both production and imports of rayon artificial silk will make a new high record this year, the Brookmire Economic Service, Inc., reports. Consumption aided by low prices and the activity in cotton goods has absorbed the record supply of rayon held earlier in the year. Mills are now in a better position than they were last year, since they have worked off the large stocks that had been accumulated at that time. Plans call for a large expansion in productive capacity in 1928.

Changing Conditions in Portland Territory

By ARTHUR D. HOSFELDT
Sales Manager, Packer-Scott Co., Portland

OF considerable importance among the outstanding events in the Pacific Coast paper field during the past year is the opening of several new mills, making different kinds of pulp and paper, and the several projects of other mills which are now in process of organization or completion.

ARTHUR D. HOSFELDT

The output of the new mills into an already well-supplied market has presented somewhat of a problem to both paper jobbers and their long-established sources of supply, and it seems that a further increase in paper production locally will intensify this problem even more.

There is no doubt that paper equal to that made anywhere can be produced here. An example of this is the case of a national merchandising organization, which, requiring a large tonnage of high-grade kraft, selected several of the better kraft papers available for an elimination test. The test when concluded proved that three papers of those selected had the necessary qualifications and the fact that one of these was made by the St. Helens Pulp & Paper Company is significant of the quality produced on the Coast.

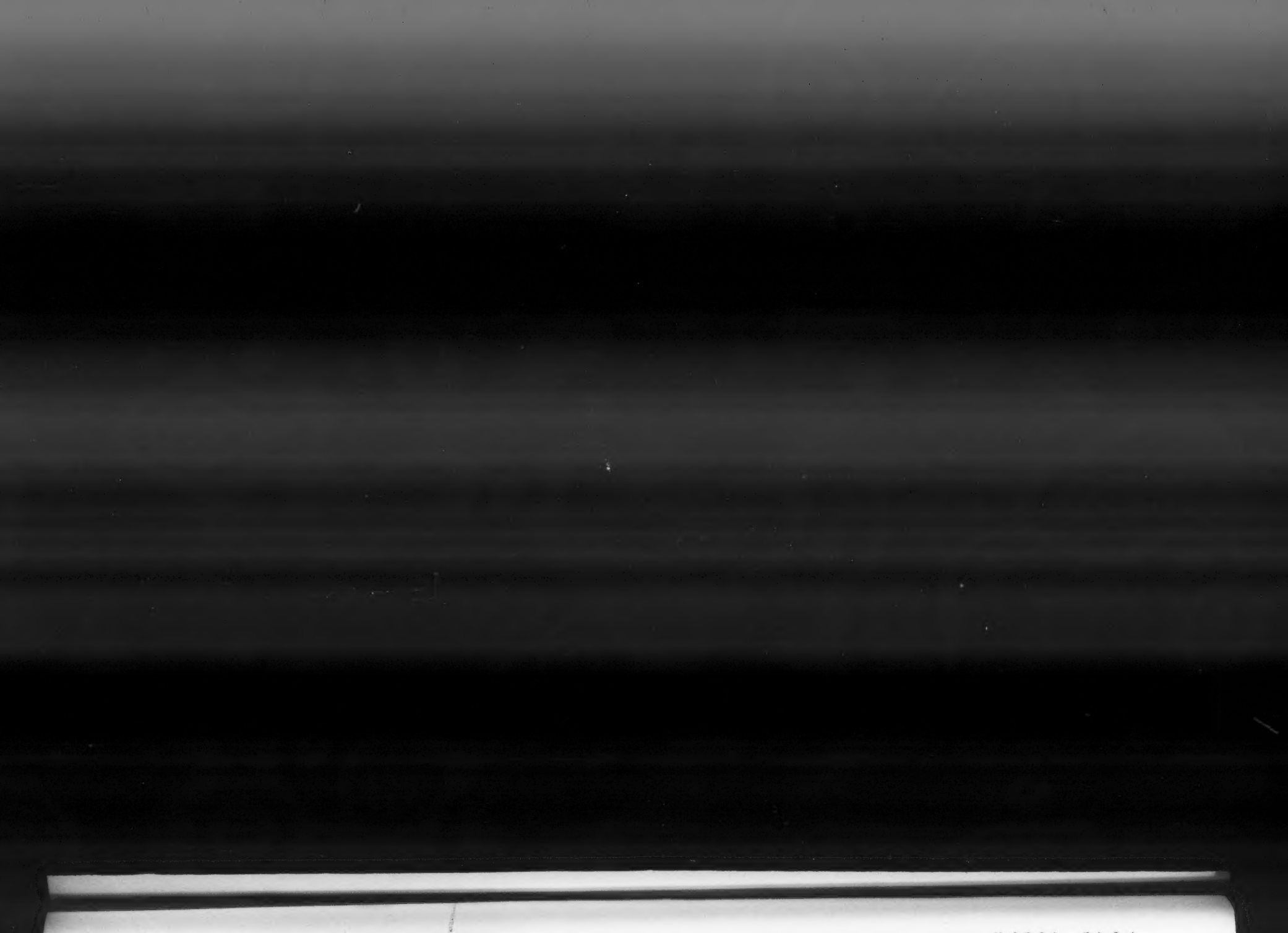
Another instance of successful competition with Eastern producers is the case of a Washington mill making roll toilet paper and towels. After serious handicaps and obstacles this mill succeeded in producing a standard acceptable quality and is now reported as running to capacity.

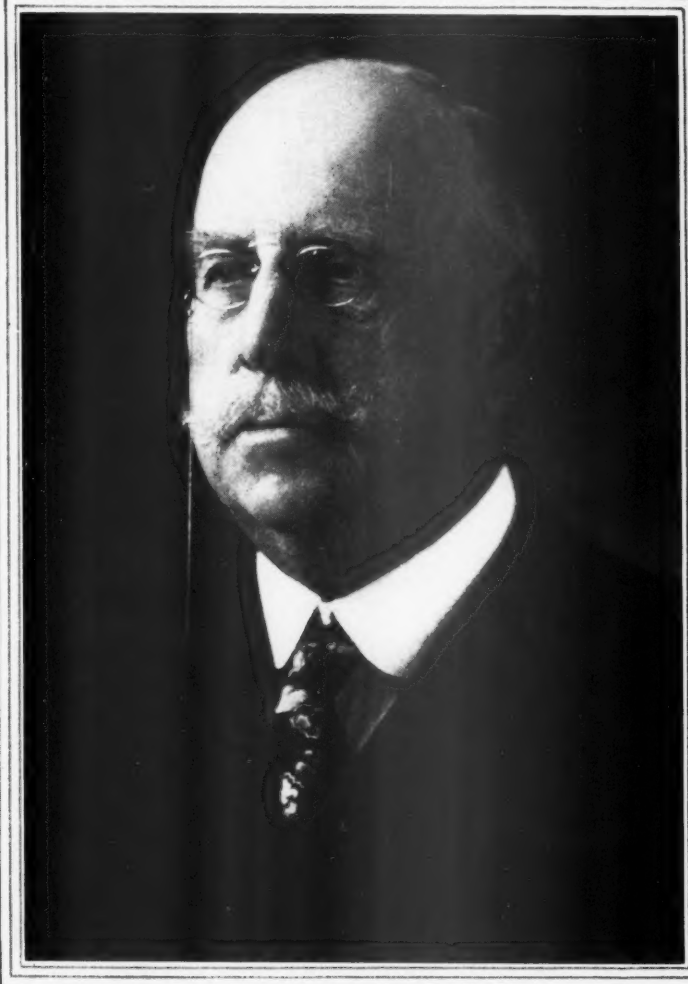
It is rumored that another established mill will soon be in production of paper towels of both the sulphite and kraft variety, which will mean that jobbers will have three sources of supply for this commodity on the Coast, a condition that undoubtedly will eliminate the Eastern manufacturer to a great extent. Thus we have actually come to a time when converters of paper commodities are locating on the Coast and it is entirely possible that in the next few years paper jobbers can be supplied with almost all of the required items in the coarse paper line as well as some fine paper items produced in their own territory.

Of importance to the coarse paper jobber is the announcement by one of the large Coast manufacturers of paper pails and similar commodities that henceforth they will supply the jobbers direct, eliminating commissions to brokers. This announcement was almost immediately followed by a material reduction in price, indicating a prevailing opinion that in-between charges be eliminated. The older mills, however, continue to confine their sales to jobber organizations who carry a stock of coarse papers for resale purposes.

The paper jobbing field during the past year has been highly competitive. In many instances the already small profit has been almost entirely dissipated, due to competition from other than strictly paper jobbers.

(Continued on page 82)





Supplement to Pacific Pulp & Paper Industry

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Pacific Coast Envelope Makers

By ALAN D. FIELD
Field Ernst Envelope Co., San Francisco.

"The Envelope Makes the First Impression"

ENVELOPE manufacturers on the Pacific Coast experienced a good year in 1927. The volume of business slightly exceeded 1926, but taken as a whole, better prices were obtained.

The general growth of this western country has been reflected in an increased demand for business envelopes. This increase, coupled with the fact that comparatively few concerns now find it necessary to send this envelope business East, makes the forecast for a good year in 1928 a logical one. While it is true that there is only about just so much business to go around, the envelope manufacturers by helpful cooperation have succeeded in raising the standard of business envelopes, and have enhanced the value of that more or less fixed volume.

ALAN D. FIELD

In most industries there is a strong movement on foot to educate the purchasing public to better things. The envelope offers splendid advertising possibilities frequently overlooked by many users. So through an intensive educational campaign among users of envelopes as well as constant efforts better to equip their own salesmen to present quality ideas in both paper and printing, the manufacturers feel that they can materially improve the profit possibilities for 1928.

Competition Is in the Cheap Lines

As in most lines, the hard competition is all in the cheap lines that carry little profit. Buyers are just as human as the rest of us, and when shown the benefits derived from using better merchandise a favorable percentage of them can be won over. The presentation of quality lines must necessarily be in keeping with the product. Much of the success of quality selling depends on proper presentation. It is along these lines that the envelope manufacturers in 1928 will cooperate to educate consumers to desire a higher standard of workmanship and paper.

One of the missions of direct selling to the consumer is the obligation to point the way to the right article for the purpose. Many a buyer has been tempted by a cheap price into buying something that does not reflect the character of his organization and probably was the most expensive in the long run. The direct specialty salesman comes along fresh from a quality sales meeting and shows to the buyer the error of his ways. There is a field for selling of this type in the solicitation of envelope business, and the firms who serve most will profit best. The envelope makes the first impression, and every wide awake manufacturer realizes that profits now come from doing good things better.

Pacific Coast envelope manufacturers welcome the increasing opportunity to purchase their paper on the Coast. Being western manufacturers they naturally lean toward a brother manufacturer in the same territory. Western manufacturers in every line have their troubles getting started, but mills making envelope papers of equal quality will always be given the preference. The year 1927 has been notable for having developed a fine source of supply for several envelope papers, and it is to be hoped that the encouragement given these mills will result in more development during 1928. The envelope manufacturers will always be willing to cooperate with the mills for their mutual benefit, and it is our hope that before long we will not have to go East for any stock.

Western Plants Modern

The envelope plants on the Coast compare very favorably with those of the Middle West and Eastern states. On a recent trip covering three months the writer visited thirty-five envelope plants, and came back to the Coast well pleased with Western methods. Of course we have had the advantage of being new in the industry and having new modern machinery, whereas over a period of time this advantage will equalize itself.

The envelope manufacturers wish their fellow converters in paper a full measure of the prosperity that seems to be available in 1928 for those who seek it effectively.

Changing Conditions in Portland Territory

(Continued from page 80)

One source of this competition is the "cash and carry" plan grocery supply house whose executives have not considered the small volume of existing paper business as compared with the much greater volume of food products in which they deal mainly and on which basis their cost of doing business is computed. These houses by means of catalogues succeed in establishing low prices on listed commodities which no service house can hope to meet on any basis. The solution of this problem in all probability lies in the increasing number of houses operating on this plan, for each new comer divides the already small amount of available business.

As a means for meeting this and other existing kinds of competition paper houses have established branches in some of the small cities in the state, so located that the branches will not be dependent entirely upon the support of the particular city, but will parallel services already given by some of the supply houses in those territories and yet have the advantage of laid-in costs on a number of items. So far local houses have established four such branches during 1927 in Oregon and Idaho and unquestionably will secure a great part of the paper business in their vicinity. This move is con-

(Continued on page 84)

Interior view showing Westinghouse Sectional Drive

Performance that proves RELIABILITY

THE experience of the Columbia River Paper Mills, as reported in the Pacific Pulp and Paper Industry, clearly evidences the reliability of the Westinghouse Sectional Drive for paper machines. A news item in the November issue of this magazine, describing a new paper machine just placed in operation, says in part:

"Westinghouse Sectional Electric Drive is used, this drive being selected because of its excellent performance on the No. 1 machine . . . . Westinghouse drive hung up a record for itself in maintenance and minimum loss of paper, the loss of time for one year being only one hour and 45 minutes."

Many paper mills are operating Westinghouse sectional drives and the number of repeat orders received from time to time proves their reliability.

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Seattle San Francisco Los Angeles

Sectional Drive *for* **Paper Machines**

Westinghouse

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Looking Backward to See Ahead

By J. L. MURRAY
Manager, Mutual Paper Corporation, Seattle.

A LOOK into the past should be more than just a post-mortem. To recount what we have done in the paper trade of the Pacific Coast in 1927 can be of little value unless we can develop from the experiences of that year ways and means of avoiding its pitfalls and problems, and thus guide our course in better fashion during the years which lie ahead. It is what we accomplish in these future years that will determine our calibre. To recount merely what has been done, without finding in the recounting something of benefit to our future, is as idle an occupation as for a statistician to compile great columns of figures and then fail to interpret them in a manner permitting improvement.

We call ourselves wholesalers of paper. The word "wholesale" conjures in our minds a picture of large orders, volume. Yet I think that it is safe to say that the average paper merchant on the Pacific Coast handles a volume of orders, more than half of which are for less than $10 each. Ten dollars is certainly not what we could call a large, or volume, order.

Face the Problem Squarely

The striking percentage of small orders would not be so sad a fact in itself were we outright philanthropists. But the fact is that we are in business to make a profit, and there is no profit in small orders, speaking in terms of averages, of course. Rather than profit, the merchants knows that small orders cost him a loss to handle, over 30 cents each, again speaking in the rather dangerous terms of averages.

I am not a pessimist, but I think it better to look a situation in the eye than to hand out a few nice sounding but empty phrases about future prosperity. The fact is, the paper jobbing trade isn't exactly in the full bloom of health. Practices and problems have developed in our branch of the industry which are taking much of the joy and profit out of business, and this has been made possible largely because we haven't been pulling together as best we might along the lines of cost accounting.

Will Not Reduce Business

The small order is one of the undesirable business trends that has forced itself upon us during the last five years. With the wisdom of experience, we have it in our power to improve the situation. The beauty of all this is that a conscious and cooperative effort on the part of the paper merchants to reduce the number of orders will not reduce the total amount of paper sold, not by a dollar's worth, but it will increase the percentage of net profit on sales by reducing costs of operation.

Ten years ago we felt the pressure of war. Necessity took precedence over pleasure. Service—service to a pampered public—was curtailed. No one suffered. Take a specific example, the business of department stores. Instead of several stores making several deliveries a day, with trucks criss-crossing all over the city, deliveries were consolidated and only one complete delivery was made in the city each day. The result was that people bought more intelligently and didn't demand a spool of cotton thread bought at eleven o'clock in the morning to be delivered before noon.

During war time you can do lots of things. You always have the war to give as an excuse to the customer who demands too much service. With the war over we find ourselves slipping back into the old ways, stretching out, devising more and more ways to give service, spreading ourselves to the point where it shows up in red ink.

The reason for it is that we aren't working together. We're afraid of our neighbor and afraid of ourselves. We encourage these little orders in many ways, not consciously always, and dare the customer to demand unreasonable and unnecessary service. And we set up precedents that are mighty hard to break down. I want to make it clear that I am not against service when service is needed. When a customer really needs paper and needs it in a hurry, I'm for getting it to him right away. But I am opposed to the idea of going through the motions of an order four times when once would suffice, and simply because the customer has the habit. It is only too true that the more service you force on a person, the more service is expected.

Begin With Salesmen

The correction of the small order business begins with our salesmen. They must have the intestinal stamina to pass up the little dab of business for which the customer has no immediate need, to let the order accumulate until it reaches a reasonable size. Only too often the customer would prefer to let the order wait over, but the over-zealous salesman actually takes it away from him, afraid to let it ride over, for fear the next order taker will grab it, as he probably will unless taught otherwise.

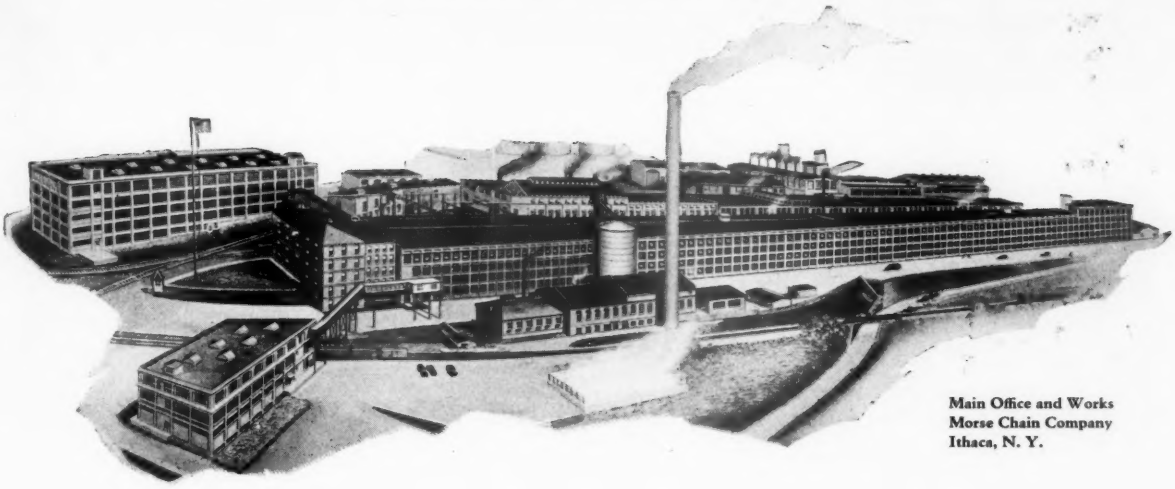
But the salesmen must have the whole-hearted support of the sales manager, and the sales managers must have the confidence of each other. If we are to benefit by our association work we must face frankly these problems which are making business less profitable, and, recognizing the problems, do something about them. Improvement cannot be a one man's game. It takes team work. The increasing number of small orders is a 1927 problem that we have come to recognize. What will WE do about it in 1928?

Changing Conditions in Portland Territory

(Continued from page 82)

structive, calculated to return to the paper jobbers part of the volume of business that has been slipping away.

The cooperative and chain buying organizations have about reached their maximum growth and although it is possible that they will continue to prosper, it is also probable that with the growth of the Northwest sufficient business will exist for the support of an additional number of coarse paper jobbers.



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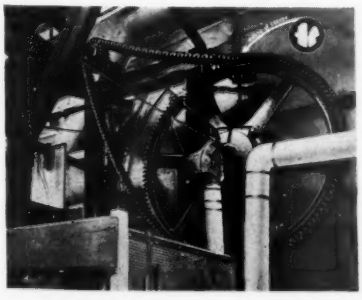
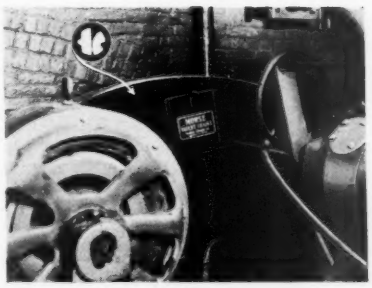


40 H.P. Morse Silent Chain Drive from motor to drier drum. Driver, 104 r.p.m. Driven, 16 r.p.m., 100" centers.

ATLANTA, GA., 702 Candler Bldg., Earl F. Scott & Co.
BALTIMORE, MD. . . . . 1002 Lexington Bldg.
BIRMINGHAM, ALA. . . . . Moore-Handley Hdwe. Co.
BOSTON, MASS. . . . . 141 Milk St.
BUFFALO, N. Y. . . . . Ellicott Square Bldg.
CHARLOTTE, N. C. . . . . 404 Commercial Bank Bldg.
CHICAGO, ILL. . . . . 112 W. Adams St.
CLEVELAND, OHIO . . . . . 421 Engineers Bldg.
DENVER, COLO. . . . . 211 Ideal Bldg.
DETROIT, MICH. . . . . 7601 Central Ave.
LOUISVILLE, KY., 516 W. Main St., E. D. Morton Co.
MINNEAPOLIS, MINN. . . . . 413 Third St.
Strong-Scott M.g Co.
NEW ORLEANS, LA. . . . . A. M. Lockett & Co., Ltd.
Queen & Crescent Building, 334 Camp St.
NEW YORK, N Y. . . . . 50 Church St.
OMAHA, NEB. . . . . 923 W. O. W. Bldg.
D. H. Braymer Equipt. Co.
PHILADELPHIA, PA. . . . . 20 South 15th St.
PITTSBURGH, PA. . . . . Westinghouse Bldg.
SAN FRANCISCO, CALIF. . . . . Monadnock Bldg.
ST. LOUIS, MO. . . . . 2133 Railway Exchange Bldg.
TORONTO, 2, ONT., CAN. . . . . 50 Front Street, E.
Strong-Scott M.g. Co.
WINNIPEG, MAN., CAN. . . . . Dufferin St.
Strong-Scott Mfg. Co.



Morse Silent Chain Drive as used in a prominent paper mill.

1832

MORSE SILENT CHAIN DRIVES

CHARLES RUBLE

HUGH PEAT

R. E. BARKER

The Outlook for the Box Makers

By CARL R. SCHMIDT
President, Pacific Coast Paper Box Manufacturers' Ass'n.

OFFICERS OF THE PACIFIC COAST PAPER BOX MANUFACTURERS' ASSOCIATION

President	Carl R. Schmidt	Schmidt Lithograph Co., San Francisco
Vice-President	R. E. Barker	National Paper Box Co., Vancouver
Secretary	Charles Ruble	Standard Paper Box Co., Los Angeles
General Secretary	Hugh Peat	San Francisco

IN President Coolidge's recent address to Congress one paragraph stands out and means a great deal. It reads as follows: "If the people maintain that confidence which they are entitled to have in themselves, in each other and in America, a comfortable prosperity will continue."

The more often you read it, the more forcibly it impresses you. The thought holds good in our industry. If we as individuals in our industry maintain that confidence which we are entitled to have in ourselves and in our competitors we will go a long way to maintain a comfortable prosperity throughout the industry as a whole.

It is my opinion that the paper box industry on the Pacific Coast was fairly successful in 1927. It was not as good, I might add, as in 1926, but somewhat more competitive. The present indications are that 1928 will be a good year, but you can safely say that competition will be keener than ever before. So it behooves the man in the industry to have closer relationship with his competitors and endeavor to keep them on the most friendly business basis, endeavor to maintain that condition of perfect trust.

A Goodwill Organization

The year 1927 was a year of knitting together, closer than ever, the paper box manufacturers of the West Coast under the banner of the Pacific Coast Paper Box Manufacturers Association. Ours is a good-will organization, formed to create friendships in the industry, to help solve mutual problems that face us all, so that we may make progress together toward the goal of better business conditions. We want to make paper box competition friendly competition and in this work I believe the association is succeeding.

In the Pacific Northwest the association work during 1927 was particularly gratifying. We now have 100 per cent membership in Portland and Seattle and these members are meeting together regularly at friendly, social gatherings. A spirit of harmony and cooperation prevails and I know each box maker is benefiting by the contacts he makes among his fellow craftsmen.

Progress was made during the year in Southern California. The southern box makers are getting closer together than ever before. Golf has helped in the south, I am sure, for the regular tournaments can only do good and create friendships. In San Francisco, as usual, the box makers are working harmoniously, meeting at luncheons regularly and on the fairways occasionally. Secretary Hugh Peat has been a driving influence for good. Our annual banquet in December carried out the spirit of the association, a spirit of good will, the spirit of friendliness towards all.

Full Co-Operation

Our thirteenth annual convention, held at Del Monte last June was described as the "best convention yet." At the meeting the speakers stressed the need for 100 per cent cooperation between competitors in the box industry. I know each delegate returned to his plant with a greater inspiration and a broader view of his work than he ever held before.

The retiring president, A. J. Schoephoester of Seattle, declared at the convention that "We no longer call the man in the same business our competitor. He is now our friend, engaged in working the same problems we all face. By cooperating with him, we can solve these problems easier than if we tackled them ourselves. Cooperation is absolutely essential to the life of our buisness, and I believe the spirit of cooperation pervades the paper box business on the Pacific Coast more than ever before."

This year we hope to make the convention still more helpful. A splendid committee working under Chair-

man William J. O'Donnell began some time ago to get ready for the meeting. It is Mr. O'Donnell's idea to make the program of more practical value than programs of past conventions. Subjects will be allotted to practical men, who will talk on problems in all departments, from the manufacture of the pulp down to the completed carton.

And so our work goes on. We are trying to make our lives successful. If I were asked what is the most important thing that leads to a successful life, I should insist that first of all it is integrity. No man can do anything of great value in life and have the confidence and approval of his fellow men or be successful in his undertakings with other business men if he does not have the reputation of being a man of honor. This does not mean that a man shall be so high in a moral and social state of life that he is incapable of any action that might not be regarded as always right, but we have the highest regard for the man who, when in the wrong, admits it and consequently sticks to the truth of integrity. Such men make for their own success and for the success of the industry in which they are engaged, provided they back it up with the right kind of enthusiasm, which is a great business asset. It means money, power and influence.

Single handed the enthusiast convinces and dominates. Enthusiasm tramples over prejudice and opposition, spurns inaction and, like an avalanche, overwhelms and engulfs all obstacles. Set the germ of enthusiasm afloat in your business, carry it in your attitude, and it will spread an influence through every fibre of your industry. It means increase in production and decrease in cost, it means joy and pleasure and satisfaction to your workers, it means spontaneous bedrock results—the vital things that pay dividends.

Let us make our own prosperity for 1928.

Paper Box Industry in San Francisco

THE year 1927 saw the San Francisco district members of the Pacific Coast Paper Box Manufacturers Association become welded together more firmly than ever in their efforts to improve business conditions in their industry.

Each Friday the San Francisco paper box people gathered at luncheon at the San Francisco Commercial Club and golf tournaments were held every month or so during the year. On December 22 the annual banquet of the group was held at Marquard's Cafe and more than a "good time was had by all."

Carl Schmidt, San Francisco, president of the Pacific Coast Paper Box Manufacturers' Association, has been a hard worker for harmony among the members, and Hugh Peat, San Francisco, secretary of the Coast section, has been active in arranging the luncheons and golf tournaments. W. H. Thomas of Fibreboard Products, Inc., was toastmaster at the annual banquet.

In a business way, the year 1927 was 15 to 20 per cent less in volume for the San Francisco district box manufacturers than was 1926, but at the start of 1928 the outlook has been described as being fairly bright for increased business.

Already the San Francisco members are working on plans for the 1928 convention, which will be held at Del Monte, California, in June. A joint meeting with the Los Angeles members will be held probably in February to discuss the coming Coast meeting. An intercity meeting was held in February last year at Del Monte for the same purpose.

Seattle Box Makers Working Together

By A. J. SCHOEPHOESTER
Union Paper Box Co., Seattle

PLEASURES and disappointments of 1927 are now a matter of history. In retrospect, our missed opportunities stand out in bold relief and too often they overshadow the accomplishments in the same period. With the paper box manufacturers of the Pacific Northwest, the year 1927 was not as productive of business as had been hoped for at the beginning of the year. The volume of business for the year as a whole was probably less than that of 1926. With the new year came new hopes. While we may be inclined to be somewhat too optimistic at the beginning of the year, I believe that an unbiased view of the next twelve months which lie ahead will reveal the brightest prospects for increased volume of business that has been apparent for several years.

A. J. SCHOEPHOESTER

Increased business, however, is largely up to the box makers themselves. There remain many fields which the box maker may enter with constructive sales effort. Getting new business will also depend to a large degree on how well the box makers work together. In Seattle during 1927 the box makers completed their local association with one hundred per cent membership. There are 11 plants in the city and the operators of these organizations have found it to their mutual advantage to meet at a social luncheon each week for the discussion of mutual problems; through these meetings the box makers in the Northwest have developed an understanding of each other's difficulties. The outlook for the coming year through cooperative efforts is encouraging.

Paper Boxes in the Denver Region

By W. E. WARNECKE
President Inland Paper Box Co., Denver.

DENVER, COLORADO, is not a large manufacturing center compared with many other cities, both east and west of the Rockies. Her industries, as a whole, have not yet come into their own —because, only for the past year or two have the Colorado users of Colorado products put real effort forward to build up her manufactured products. Efforts in this line are beginning to bear good fruit.

Loyalty to home industries seems now to have taken real hold upon both merchants and manufacturers alike, so that home made products get the preference and those made outside cannot hope to receive much attention unless the quality is as good, and the prices lower.

With particular reference to the paper industry, there are less than half a dozen concerns in Denver engaged in making paper and paper products.

The Colorado Pulp & Paper Company (formerly the Myers Pulp & Paper Co.), after some years of strug-

(Continued on page 88)

Paper Box Outlook in B. C.

By R. E. BARKER
National Paper Box Co., Vancouver, B. C.

BRITISH COLUMBIA'S paper box industry has just witnessed its best year since 1919 and is out to hang up a new record next year in sales and earnings. Business in our particular line is influenced largely by conditions on the praries and they happened to be extremely good in 1927. They will stay good for many months because the prairie farmers have had three successive crops of gigantic proportions and grain prices high enough to put more money in their pockets than they have had in years. This means increased buying power and the grain farmer is such a big factor in Western Canada that his spending will be felt right down the line and paper boxes will be sold according to the farmer's buying of other commodities. Both in luxury and staple lines the paper box is regarded as indispensable and every year new uses are being found for the paper carton in Canada.

R. E. BARKER

In British Columbia during the past year we have not succeeded in breaking in any new lines of importance. We have been trying to educate the apple industry to use paper cartons for packing less-than-box lots, but so far our progress has been limited. We are still convinced that the objective is worth while, for fruit production in British Columbia has attained very large proportions and if the paper carton is once adopted by some of the larger shippers it will mean an important increase in sales. The same applies to the fish industry. Certain products of British Columbia fisheries are suitable for paper packing, but only in a few cases has the idea been adopted. The fish industry is important to us, however, as a market for wrapping material.

Prosperity in the paper box business depends directly on the state of the major producing industries and fortunately this has been sound. We look for an improvement in 1928 and anticipate a banner year.

Paper Boxes in the Denver Region

(Continued from page 87)

gle, recently passed under receivership. The outlook, while not now optimistic, is reported to be showing figures on the right side of the ledger under the supervision of George W. Beck, receiver.

The Inland Paper Box Company is easily the largest manufacturer and consumer of box boards, sulphate liners, and straw, within the Rocky Mountain region. The company moved into its own new five-story building at 1625-1631 Wazee Street in 1927. The new plant has all the modern machinery of a well equipped corrugated shipping carton factory. This company also manufactures shooks and set-up boxes of every description, catering especially to candy makers and novelty manufacturers.

The Deline Manufacturing Company manufactures candy boxes of every description and is devoted, exclusively, to that particular line. They ship to the finest trade in all sections of the country, from the Atlantic to the Pacific and from Canada to the Gulf. This company suffered a serious loss by fire which came right in the height of their 1927 holiday business and destroyed much valuable stock and burned the buildings to considerable extent. But within twenty-four hours the management began work and the entire plant carried on with no trace of the handicap.

The Luby Box Company, manufactures set-up boxes of all kinds, principally those used by shippers of manufactured articles is one of the newer concerns of the Denver region and is enjoying a good share of business.

The Continental Paper Products Company, located in South Denver, an old concern, manufactures folding boxes of every description. They have a lithographing plant and manufacture multi-color labels.

Business conditions, during the past year in Denver, have not been all that was hoped for when the year began—some have made a little money—some have not. There seems to be a splendid spirit of cooperation existing among, not only the paper interests, but all business interests. Everyone seems to be extending themselves to pay their bills to each other. The Buy-at-Home policy is growing rapidly in all lines from brick making to flying machines. Denver citizens, almost to a man, tell us they cannot hope to grow if they take money from their neighbors and buy goods made in a distant state, which can be bought at home.

Paper Box Status in Southern California

By CHARLES A. ELVIN
Secretary, Los Angeles Paper Box Makers

NOW that the New Year with all its possibilities for good or ill has dawned, a review of the activities of the paper box-making industry for the past year may be of interest as well as of profit.

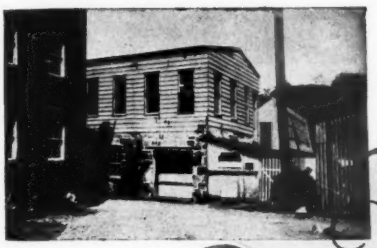
Returns for the first half of the year were very discouraging, but more business was offered as the year progressed. It was not until a few weeks before Christmas, however, that all factories were working full time, but this period was entirely too short to make up for the many months of slackness and part-time operating.

Outside competition was a serious factor, especially that coming from the East, which added considerably to the problem of the highly competitive conditions prevailing. One factory was forced to cease operating during the year on account of continuous heavy losses with no relief in sight.

The consumer demand was very much below expectations and this condition in a greatly restricted market caused boxmakers to conserve in every way. Many turned their attention to speeding up and finding ways and means for giving greater efficiency in the operation of their plants. New ideas and much extra service were given to patrons during the year, which no doubt was responsible for increased sales in many lines handled by retailers and others.

This is all part of the game, of course, and illustrates to some extent how the paper box manufacturer of

(Continued on page 90)

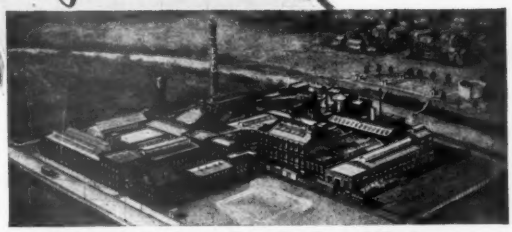


Original Plant of The Paterson Parchment Paper Co., and the Birthplace of the Vegetable Parchment Industry in America—Paterson, N. J., 1885.

1885

Where the Vegetable Parchment Industry Originated —and how it grew—

1928



The Paterson Parchment Paper Co. General Headquarters, Parchmentizing and Printing Plant. Passaic, New Jersey.

THE plant where Vegetable Parchment was first produced in America (1885) was the modest early home of the Paterson Parchment Paper Co. in Paterson, N. J. It used to be called the "Old Gun Mill" because the first "Colts" had been made in that building.

There, in spite of skeptical critics, 6000 lbs. of Vegetable Parchment were produced and sold in the first year. *This amounts to less than one hour's run today!*

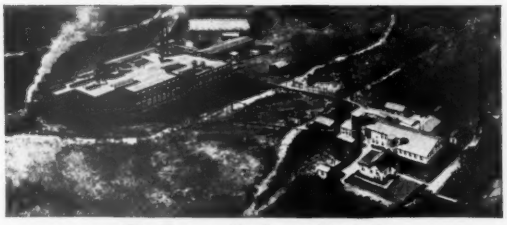
Vegetable Parchment was first looked upon as a novelty. However, keen producers soon realized its value as a protective wrapper for food products. Among the first to use it liberally were the cracker manufacturers. Then, in the early nineties, the butter makers and meat packers discovered its unique value to them. And through the use of Vegetable Parchment, they practically revolutionized the marketing methods of their industries.

Other makers of food soon learned how to protect their cherished products with this remarkable new wrapper. Ice cream manufacturers, milk shippers, cheese makers, produce men, florists, fish merchants, and finally, the housewives themselves—all in turn found a unique way in which Vegetable Parchment could serve in protecting the health of the American people.

Thus the industry grew.

To carry its share in this work of genuine public welfare the Paterson Parchment Paper Company today requires the combined services of three great operating units in Passaic, N. J., Modena, Pa. and Edgely, Pa. These completely equipped factories cover 700,000 square feet of floor space, and house the most modern and up-to-date machinery. And back of these machines you will find a corps of loyal, faithful people—alert, intelligent, scrupulously jealous of the industry which they have founded and carried on for over forty years.

All business executives are cordially invited to employ the services of our laboratory in working out their individual problems—wholly at our expense.



The Paterson Parchment Paper Co
Megargee Mill No. 1 at Modena, Penna.

The Paterson Parchment Paper Co.
Megargee Mill No. 2 at Edgely, Penna

The Paterson Parchment Paper Company

Original Makers of Vegetable Parchment

CHICAGO PASSAIC, N. J. SAN FRANCISCO

Paper Box Outlook in Oregon

By C. A. MORGAN
Manager Folding Box Dept., F. C. Stettler Mfg. Co., Portland

C. A. MORGAN

GENERAL paper box production in the Portland territory in 1927 fell somewhat below the 1926 figure, due probably to seasonal conditions as much as to any one factor, but with everthing considered the year was satisfactory. It was particularly satisfying to those who have looked forward to the early prediction by fortfying themselves with new originations.

The untiring efforts of the Pacific Coast Paper Box Manufacturers' Assoication to develop uniform cost finding is meeting with more success each year. Our concern adopted the plan several years ago and we are more than pleased. If all local paper box makers were able to obtain a cost of each and every order, the paper box industry here would be greatly benefited. We hope that more cost systems will be installed during 1928.

The future outlook for this territory is promising. Of course some buyers are ordering only for immediate use. But this attitude of holding off is offset by the larger users, who are placing the usual contract evidently thinking very little about a 1928 slump.

Paper Box Status in Southern California

(Continued from page 88)

today is co-operating and assisting the sales departments of many dealers, in commodities of every kind. This human service was very much appreciated also by the many thousands of holiday shoppers who desiring to please their friends as much as possible, insisted on their gift purchases being placed in the very attractive paper boxes which were in evidence in almost every store.

The prospects of the new year at this date would indicate at least the same tonnage as last year and possibly a slight increase. If these prospects materialize no further change in the disposition of plants is likely.

INTERCOASTAL WATER BORNE SHIPMENTS OF PAPER—1927

LOS ANGELES—Inbound (Tons)

Commodity—	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Box and Cardboard	222	6	13	2	77	72	53	26	33	49	204	93	850
Paper Manufactures	799	632	1,039	754	543	822	741	520	770	767	612	676	8,675
Newsprint	1,144	3,156	....	21	....	62	34	48	22	....	20	29	4,536
Papeteries	268	52	32	121	101	84	80	146	61	108	123	27	1,203
Printed Matter	287	317	328	288	303	234	308	368	459	460	333	255	3,930
Printing	1,392	1,378	1,491	1,408	1,268	1,270	1,516	1,307	1,146	1,689	1,166	1,053	16,084
Toilet	707	218	308	614	551	382	221	118	198	228	501	243	4,289
Wall	158	107	136	84	49	71	24	19	13	29	42	112	844
Waxed Wrapping	216	10	83	58	30	10	16	8	138	232	24	29	854
Wrapping	389	216	488	518	352	526	581	398	262	286	325	277	4,618

LOS ANGELES—Outbound (Tons)

Paper Manufactures	....	....	....	4	....	5	....	2	....	48	....	....	59
Printed Matter	....	5	1	....	....	....	1	....	....	3	120	....	130
Paper Waste	482	803	652	384	550	635	857	908	631	968	505	....	7,375
Wrapping	....	....	....	....	....	....	....	8	....	4	14	....	26

PORTLAND—Inbound (Tons)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Boston	124	115	95	86	125	195	178	107	69	58	115	....	1,267
New York	47	69	103	80	87	153	166	160	113	123	62	....	1,163
Philadelphia	75	75	130	70	88	98	46	76	44	25	59	....	782
Baltimore	....	....	....	....	....	10	12	....	....	....	12	....	34
Norfolk	44	....	....	....	1	....	14	....	25	....	....	....	84
New Orleans	55	18	37	....	22	....	14	....	8	2	....	....	156
All Ports	....	....	....	....	....	....	....	....	....	....	....	329	329
Total	345	277	365	236	323	456	430	343	259	208	244	329	3,817

PORTLAND—Outbound (Tons)

New York	477	503	925	923	807	535	832	869	1,079	1,091	825	....	8,866
Philadelphia	85	56	18	148	198	55	15	232	258	81	459	....	1,605
Baltimore	31	....	....	....	....	....	....	....	....	....	....	....	31
Boston	13	20	18	44	....	....	....	124	107	31	135	....	492
Charleston	....	....	....	31	....	....	....	....	....	....	....	....	31
New Orleans	100	10	79	22	106	....	114	205	60	51	19	....	766
Houston	....	....	22	15	....	....	....	....	....	....	....	....	37
Mobile	....	....	....	....	....	....	....	....	....	21	....	....	21
Jacksonville	....	....	....	....	....	....	199	141	130	....	....	....	470
Beaumont	60	....	....	....	....	....	....	....	....	....	....	....	60
Total	766	589	1,062	1,183	1,111	590	1,160	1,571	1,634	1,275	1,438	....	12,379
Total Wood Pulp	....	....	....	....	....	....	....	....	....	1	2	....	3

SEATTLE—Inbound (Tons)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Atlantic Seaboard	308	452	441	637	562	656	534	393	547	426	541	376	5,873
California	771	565	840	1,356	999	1,323	793	1,350	1,358	1,735	668	378	12,136
Gulf Ports	28	13	28	17	17	20	....	....	9	....	....	....	132
Total	1,107	1,030	1,309	2,010	1,578	1,999	1,327	1,743	1,914	2,161	1,209	754	18,141

SEATTLE—Outbound (Tons)

Alaska	60	62	86	183	468	219	127	183	154	97	101	81	1,821
Atlantic Seaboard	45	10	9	7	6	5	5	8	4	4	8	11	122
California	2,218	409	660	532	810	580	1,647	1,740	1,449	2,010	1,297	3,859	17,211
Gulf Ports	....	11	....	....	....	....	....	....	....	29	....	....	40
Hawaiian Islands	71	147	....	12	96	97	88	66	74	142	93	95	981
Philippines	9	112	53	32	83	91	84	8	27	....	23	15	537
Total	2,403	751	808	766	1,463	992	1,951	2,005	1,708	2,282	1,522	4,061	20,712

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WOOL PRODUCTS

REG. U.S. PAT. OFF.

The Kenwood Mark on a Papermaker's Felt or Jacket is assurance that it is the Best for its purpose that can be produced anywhere in the world.

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F. C. HUYCK & SONS

KENWOOD MILLS
Albany, N. Y.

KENWOOD MILLS, LTD.
Arnprior, Ontario

Interpreting the Year's Business

By OLIVER P. WHEELER
Manager, Division of Analysis and Research, Federal Reserve Bank, San Francisco

EXCEPT as history, business or economic reviews are justified only if they provide forecasts of what is to come or furnish the basis for such forecasts. This review is designed to furnish sufficient information, backed by facts and figures, to enable the thoughtful business man to arrive at his own forecast. Perhaps some preliminary remarks may aid in interpreting what follows and help the reader who cares to give the subject more than passing thought to see the general business situation, both past, present and future in that perspective which gives it most meaning.

OLIVER P. WHEELER

Economic or business conditions on the Pacific Coast, as in most other regions, involve six main general factors: (1) agriculture, (2) industry, (3) distribution and trade, (4) prices, (5) banking and credit, and (6) speculation. These six factors, together with the many and varied relationships existing among them, constitute what we call business conditions. Accurate and complete information concerning all of the elements entering into each and every factor, correct interpretation of the meaning of these elements and knowledge of how they are most likely to react to changes in their relative positions at any given time provide the basis of an intelligent forecast of general business conditions. It is, of course, impossible to obtain 100 per cent of the ingredients of such a forecast—the data and information are nowhere available in that profusion and variety. It is hoped, however, that a sufficient proportion of these ingredients may be presented in this review to enable thoughtful business men to arrive at a satisfactory forecast of general business conditions in the Pacific Coast states, should they care to.

Volume Greater

The volume of business transacted in Coast states probably was larger in 1927 than in 1926, but the rate of its growth was slower during most of the year than was the rate of growth during immediately preceding years. The amount of the year's increase probably was less than the long time expectation, based on development of natural resources and growth of population, both of which are of basic importance to business in these states. In some branches of industry and trade there was definite improvement, and in no large general field was there a serious recession from last year's levels of activity. In general, it may be said that, at the close of 1927, agricultural purchasing power seemed more available for spending on the goods of commerce than a year ago, industrial employment conditions were satisfactory, considering the usual seasonal factors affecting them, the general price level was stable, industrial output was at relatively low levels, while trade and distribution were in more satisfactory condition than was industry, and the underlying credit structure was sound and capable of providing, without stress, further means to finance business. It is reasonable to conclude that business has entered the year 1928 with relatively light stocks of goods on hand, ample available credit resources and a considerable backlog of consumer purchasing power to support its activities during the year.

The more important aspects of the chief types of evidence available to substantiate these generalized statements of business conditions may be summarized briefly by topics.

Agriculture Better

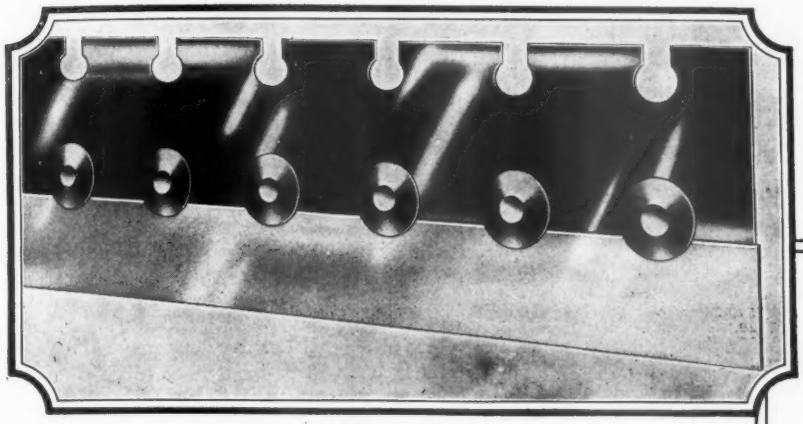
Agriculture—The economic position of agriculture was, on the whole, more favorable in the Pacific Coast region during 1927 than during 1926. Final estimates of production indicate larger crop yields in the aggregate (although there are certain specific exceptions to this statement) than were obtained last year. Lower prices for a few crops have been offset by increased prices received for most crops. The general level of agricultural products, prices rose, particularly during the last half of the year, a period when the bulk of the Coast's agricultural output is marketed by producers. This fact, coupled with the greater volume of production, indicates an increase in gross farm income during the 1927-1928 agricultural year as compared with the 1926-1927 season.

The livestock and dairy industries experienced a profitable year in 1927. Continued improvement in the economic position of cattle raisers was particularly noteworthy. Both physical and economic conditions were favorable for sheep raisers throughout the year.

Changing Dietary Habits

In evaluating the results of the agricultural year, it is important to note that farmers and livestock raisers generally are not now obligated to use so large a proportion of their year's financial returns in liquidating old debts as they have been during each of the past several years. Some consideration should also be given to the possible effects of changing dietary habits upon markets for agricultural products.

Industry—Workers on payrolls of industrial concerns were fewer in number and total wage payments were slightly smaller in volume during 1927 than during 1926, an indication that industry generally was not so active during the latter as in the earlier year. Seasonal expansion of industrial activity during the first quarter of the year was followed by curtailment during the second and third quarters which persisted to the close of the year, probably causing a decline in the volume of production to levels, below those of 1926. At no time during the year was unemployment a serious general business or industrial problem in the Pacific Coast states. Building, lumbering and the food products industries such as fruit and fish canning generally were less active in 1927 than in 1926, while production of non-ferreous metals and petroleum in 1927



The improved Frossard Flexible Doctor Blade and Blade Holder. No grinding—no fitting: the blade conforms to the roll surface. Blades easily replaced without removing Doctor from machine.

SEND FOR THIS BOOK

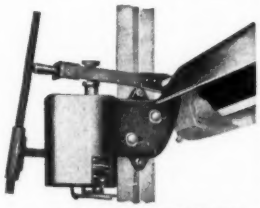
Illustrates this Doctor as used with Dryers, Calenders and Super Calenders, and gives full construction details. *Write to*

RICE BARTON & FALES INC.
WORCESTER MASSACHUSETTS

Announcing the Improved Patented FROSSARD FLEXIBLE DOCTOR *with* Hand *or* Electric *Control*

It is now practicable to apply a Doctor to Breast Rolls, Wire Rolls, Press Rolls, Dryers, Calenders, Reels and Super Calenders. Clean Rolls mean better surfaces and fewer breaks, with lost time reduced to a minimum. They are possible only with a Doctor that maintains perfect contact throughout its length.

IN the new and improved Frossard Doctor maximum flexibility is obtained through the use of a thin steel Blade Holder and detachable Blade. The material used in the Blade is selected, depending upon the service required. With only a very light pressure the Blade edge conforms to the surface of the roll in uniform contact.



ELECTRIC CONTROL

Torsion Shaft

The Blade Holder is bolted to a Doctor Back that operates on a steel Torsion Shaft journaled to the machine frame at either end of the roll. Within the Back is fastened a series of bearings by which the Back is supported by the Torsion Shaft. By the bearing or bearings at the center of the Doctor the Back and Torsion Shaft are securely keyed, applying the pressure at the middle of the Back, thus giving a much more uniform pressure than would be the case if the pressure was applied at either end. The bearings toward and at the ends are a working fit to allow the shaft to twist freely in applying the pressure to the Back through the fixed center bearings.

The Torsion Shaft is operated by a flexible lever. Any degree of tension can be obtained by first moving this lever about the shaft, and securing it in the correct position by means of twin set screws.

Hand and Electric Control

Two types of control are now available. In the hand-operated type the flexible lever is held in the "on" position by a double shoulder lock casting. The Doctor is released by merely pushing this lever outward, away from the notch, and raising or lowering it as required. In the electric control this lever is operated by a solenoid controlled by a tumbler switch on the frame of the machine. A master switch removes or applies all Doctors simultaneously. Current required is 4 amperes at 110 volts on a ten roll stack.

FROSSARD

DOCTOR

PERFECT CONTACT WITH MINIMUM RESISTANCE

approximated that of 1926, and output of flour was slightly larger. Comparative dollar value figures of building permits for some of the more important Pacific Coast cities appear in the accompanying table. The chart shows index numbers of the Federal Reserve bank's estimates of changes in daily average production of lumber in California, Idaho, Oregon and Washington during the months of 1925, 1926 and 1927. Pertinent figures of the canned foods and petroleum industries follow:

Canned Foods

	Fruits* (cases)	Vegetables* (cases)	Salmon† (cases)
1927	21,657,577	9,569,828	4,447,000-p
1926	27,477,963	10,429,516	7,488,620
1925	20,323,719	9,620,842	7,488,620
1924	14,631,939	7,795,642	6,240,867

*Figures are for California, Idaho, Oregon and Washington combined. †Figures are for Alaskan and continental United States waters. p-Preliminary estimate.

Petroleum (California)

	Total (barrels)	Per Cent California to United States	Daily Average (barrels)	Stored Stocks At End of Year (barrels)	Producing Oil Wells Completed	Average Active Producing Wells
1927-p	231,181,000	25.0	633,372	115,179,167	900	11,279
1926	224,117,000	29.2	614,019	119,542,556	913	11,288
1925	230,147,000	30.4	630,541	127,194,894	948	11,393
1924	230,064,000	32.1	628,590	97,829,374	1,238	10,903

P-preliminary estimates.

Distribution and Trade—Distribution and trade generally were more active during 1927 than during 1926. Railway freight carloadings, an indication of the volume of goods distributed, and dollar value of sales at retail were larger in 1927 than in 1926. Value of sales at wholesale and value of imports and exports, on the other hand, were smaller than in the previous year. These decreases in dollar value figures were not so great relatively as were the declines in prices of principal commodities passing through wholesale and foreign trade channels, and it is estimated that the physical volume of distribution was greater during the past year than in 1926.

Jobbers generally reported that collections were poorer during the second and third quarters of 1927 than during the same period of 1926. Toward the end of the year activity in wholesale trade increased and collection conditions improved, reflecting chiefly the improved economic status of agricultural communities.

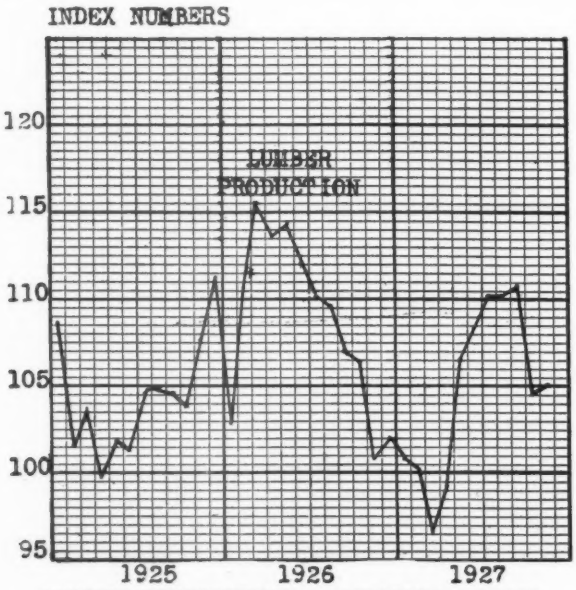
The course of department store (retail) and wholesale sales in the Twelfth Federal Reserve District during the past three years is shown graphically in the accompanying chart.

Prices—The average level of wholesale prices was about 5 per cent lower in 1927 than in 1926, according to the revised wholesale price index of the United States Bureau of Labor statistics. Using this index as a measure, it is evident that the general wholesale price level declined during the first three months of 1927, remained stable during April, May and June, rose slightly during the third quarter and changed little during the last three months of the year. During the year as a whole, prices of agricultural products moved upward, while the trend of prices of non-agricultural products was slightly downward. The price maladjustment which, since 1920, has existed between prices of those products which the farmer sells and those products which he buys was thus further reduced during 1927.

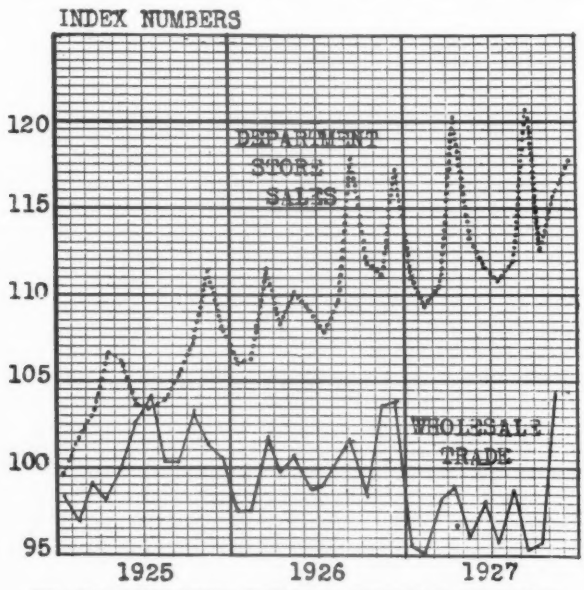
Changes in Credit Demands

Banking and Credit—Changes in condition statements of commercial banks and of the Federal Reserve Bank of San Francisco during the year 1927 reflected changes in demand for credit at commercial banks and changes in the uses to which those banks directed their funds. During the first half of the year, changes were largely seasonal in character, while the second half-year they reflected the retarded pace of business activity, particularly in industry. On September 10, 1927, during this period of declining business activity, the Federal Reserve Bank of San Francisco reduced its rediscount rate from 4 to 3½ per cent on all classes and maturities of paper. The 4 per cent rate had been in effect since November 23, 1925.

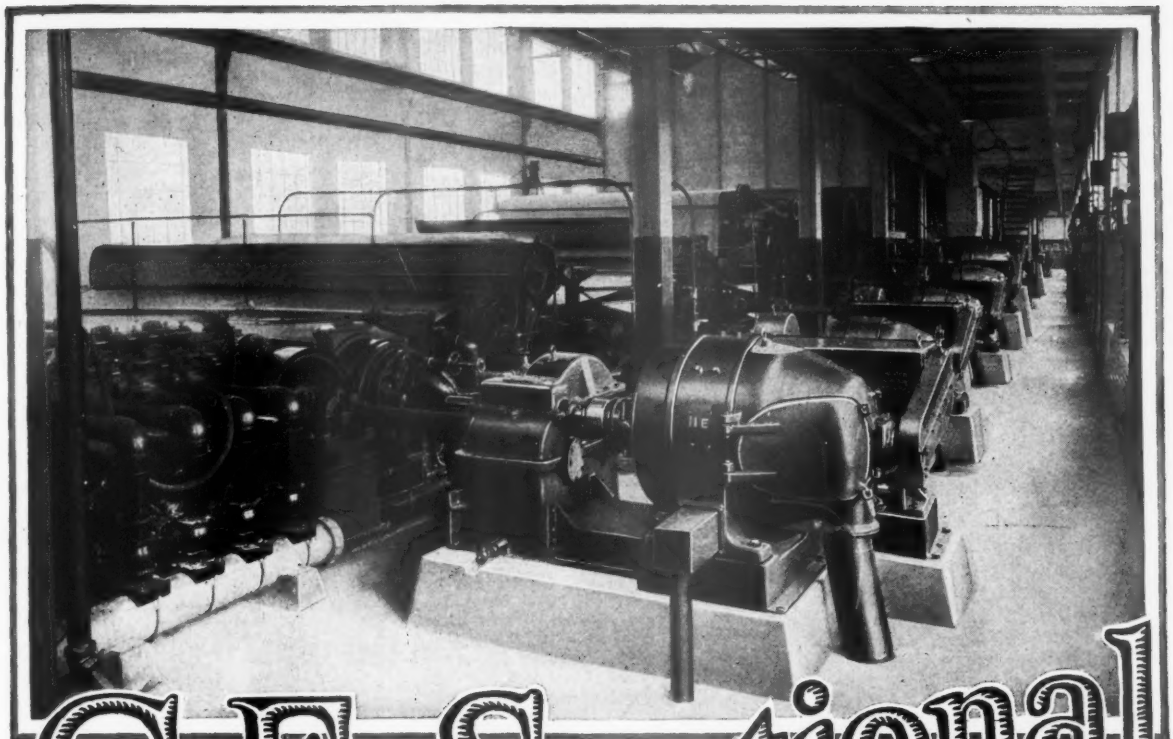
Following the customary first-of-the-year liquidation



LUMBER PRODUCTION—CALIFORNIA, IDAHO, OREGON AND WASHINGTON
Original Figures Adjusted For Seasonal Variation
1923-1925 Daily Average Production—100



TRADE—TWELFTH FEDERAL RESERVE DISTRICT
Original Figures Adjusted For Seasonal Variation
Department Store Sales—1923-1925 Daily Average Sales—100
Wholesale Trade—1923-1925 Monthly Average Sales—100



G-E Sectional Drive

Repeat orders tell the story.

The sectional drive shown above is installed at the Everett Pulp and Paper Company, Everett, Wash. The Everett Company got such good performance out of this drive that it ordered two more to change over existing machines.

The following are repeat orders for the past three years:

1925:	Canadian International Paper Co.	4
	Tonawanda Paper Co.	1
1926:	Oregon Pulp and Paper Co.	3
	Canadian International Paper Co.	4
	Everett Pulp & Paper Co.	2
1927:	Great Northern Paper Co.	1
	Warren Manufacturing Co.	1

The entire continent puts confidence in G-E Sectional drive.

Apply the proper G-E Motor and the correct G-E Controller to a specific task, following the recommendations of G-E specialists in electric drive, and you have G-E Motorized Power. "Built in" or otherwise connected to all types of industrial machines, G-E Motorized Power provides lasting assurance that you have purchased the best.

Motorized Power
—fitted to every need

237-15

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

period, and during the first quarter of 1927, total loans of reporting member banks and discounts at the Reserve Bank increased slightly, reflecting seasonal expansion in trade and industry. The sharp upward trend in time deposits at member banks which has been noted during the past several years moderated slightly during 1927. In the first quarter of the year the increase of time deposits was exceeded by the increase of security holdings, a factor which probably contributed to the slight increase of borrowing at the Reserve Bank.

During the second and third quarters, total loans of member banks tended to decline, as did their holdings of investments. Total deposits of these banks changed little during this period, however, and as a result member banks held an excess of funds which was used to liquidate their borrowings from the Reserve Bank. In September, daily average holdings of discounted bills at the Federal Reserve Bank of San Francisco, at $35,597,000, were smaller than at any previous time since February, 1926.

During late September and in October, at the peak of the harvesting season, member banks' loans increased rapidly, reaching a seasonal peak of one billion 291 million dollars on October 12. For the first time since 1921 and contrary to the experience of most years, the high point of autumn borrowing was below that of the previous spring ($1,317,000,000 on March 9, 1927), further evidence tending to confirm the apparent decline of business activity which ocurred during the last half of 1927. During part of the crop moving period, member banks greatly expanded their investment holdings. This partly accounts for the fact that discount holdings of the Reserve Bank were nearly doubled during September and October. At $59,363,000 on October 12, 1927, the high point of the year, however, discounts at the Reserve Bank were $5,500,000 (8.5 per cent) smaller than on October 13, 1926, and $9,000,000 (13.6 per cent) smaller than the 1926 high figure of September 29, 1926.

The usual temporary reduction in total loans of reporting member banks and in discounts at the Federal Reserve Bank of San Francisco was noted late in October and early in November. As the incidence of demand for credit tended to shift from industry and agriculture to trade during the first weeks of December, these items again showed increases, and loans at reporting member banks reached a seasonal holiday peak of $1,306,000,000 on December 21, 1927, after which they declined rapidly. At the same time discounts at the Reserve Bank also increased seasonally. From mid-December to the year-end seasonal liquidation reduced the volume of discounted bills held by the Reserve Bank. During the closing days of the year the reserve ratio of the Federal Reserve Bank of San Francisco advanced to 84, the highest figure reported since the summer of 1924, when business activity was declining and credit supplies were abundant.

Speculation—Satisfactory measures and reliable information of speculative activity in Pacific Coast states are not available in such form as to permit a statement of their effect on business activity in this review.

BUILDING PERMITS

	—1927—		—1926—	
	Number	Value	Number	Value
Berkeley	2,691	$ 6,687,233	3,221	$ 7,337,076
Boise	945	1,260,191	756	649,230
Fresno	1,040	2,682,563	1,153	1,819,985
Long Beach	4,806	12,707,145	4,298	8,615,720
Los Angeles	37,655	123,027,139	37,478	123,006,215
Oakland	7,770	20,794,669	10,835	28,075,295
Ogden	308	1,005,260	311	1,438,150
Pasadena	2,757	9,019,866	2,886	9,667,900
Phoenix	1,224	5,652,115	1,207	2,637,123
Portland	11,294	28,973,455	13,256	32,588,975
Reno	239	723,755	251	1,809,141
Sacramento	2,481	8,810,788	2,662	7,732,572
Salt Lake City	1,010	4,664,630	1,157	5,407,728
San Diego	7,394	14,251,966	8,718	20,001,729
San Francisco	9,191	47,032,848	10,085	57,953,948
San Jose	1,066	3,586,885	1,449	4,377,020
Seattle	9,906	29,070,080	10,924	34,207,700
Spokane	2,113	3,656,499	2,389	4,190,675
Stockton	977	2,824,193	1,031	2,749,564
Tacoma	2,393	5,390,113	3,014	7,121,632
Totals	107,260	$331,821,393	117,081	$361,387,378

Progress in Forest Fire Prevention

By C. S. COWAN
Chief Fire Warden, Washington Forest Fire Association

FOREST fire prevention and forest fire fighting on the Pacific Coast is much more than a topic of conversation—it is a subject that affects the whole economic situation. This being so, it is a subject that can well be reviewed from time to time, overhauling the machinery in existence, seeking out those points which appear to need strengthening, and assimilating the lessons which each fire season brings forth.

Fire damage during the year 1927 was extremely light. The season opened late in June, and closed about August 25, three weeks earlier than usual. During late July and early August, a period of intensely hot weather, accompanied by low relative humidities and lightning storms, swept the area from the Cascades to the Coast. During this period of five weeks, approximately 75 per cent of the total number of fires broke out—the normal season being 20 weeks—and during this five-week period, approximately 80 per cent of all damages occurring during the whole fire season was done. The peak of the fire occurance was reached on August 5, when a total of 88 fires broke out in one day, with the result that the personnel of the organization of the state was strained to the utmost.

The loss of timber holders was light, it being estimated that but 12 million feet of timber was destroyed.

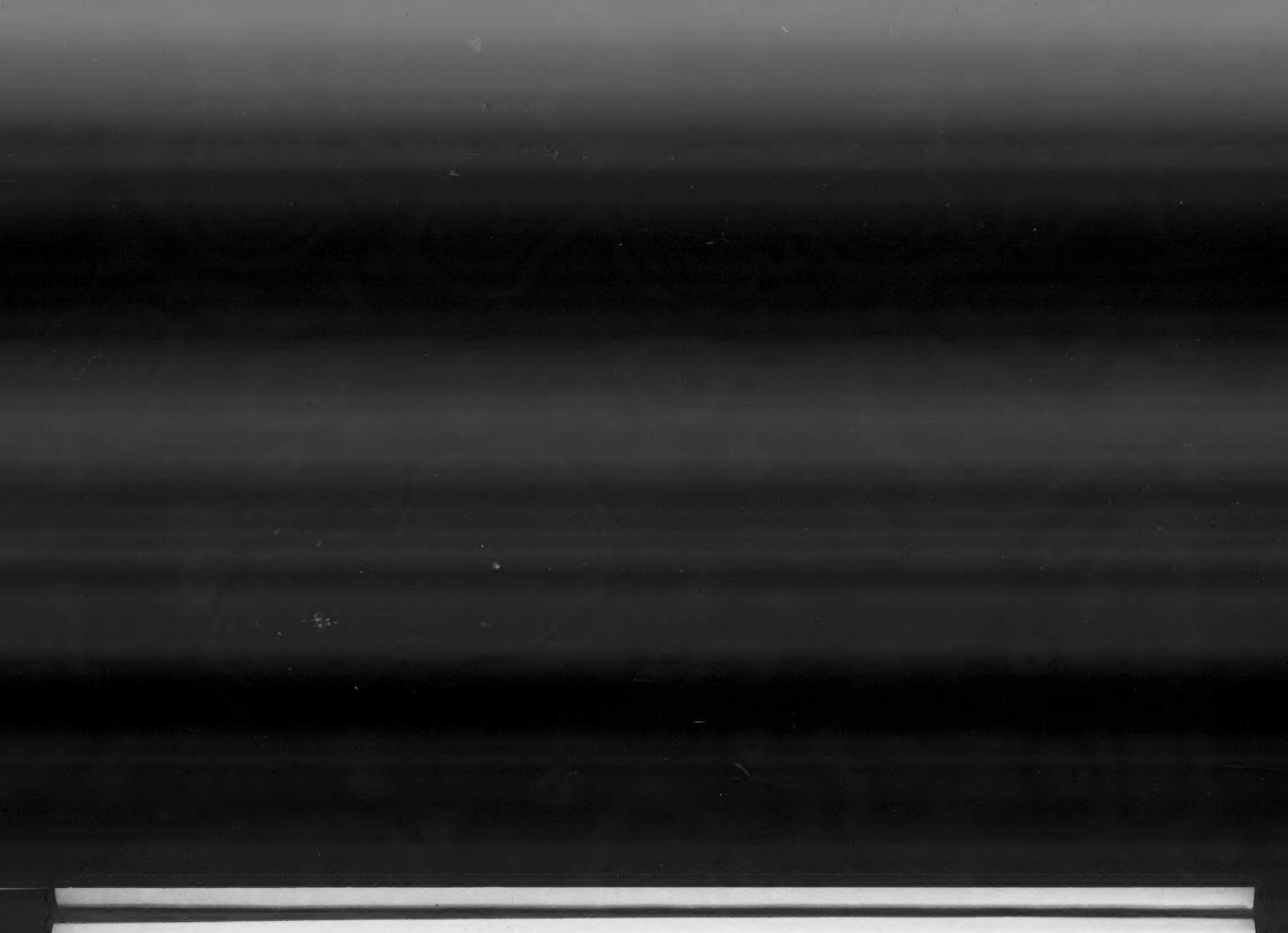
A Greater Public Interest

The most heartening aspect of the Forest Protection work is that the general public, the timber owners, and the loggers are each, as a class, becoming more and more interested in the need for greater care in the woods during the fire season.

The general public is heeding the warnings so generously given publicity space by the press. The timber owners have organized into organizations for fire prevention, of which the Washington Forest Fire Association is a type, while the logger has taken into consideration in his operating plans, the need for instruments which show when dangerous fire weather appears, is securing spark arresters which have been proven, has organized his camps so that if fire does break out, his men and equipment are ready to meet the emergency, while the early morning shift is spreading. All these are most important factors in fire prevention and suppression.

With these points in mind, it is easy to visualize the immense strides made in Fire Prevention during the past ten years, both with regards to the directly interested and the disinterested public.

With the schools also spreading the gospel of Fire Prevention, it is not too much to hope for a time when Forest Fires will be as scarce as a smallpox epidemic. Both are the result of carelessness and ignorance, both can and have been cured by care and science. And a fire-free coast is not an impossible ideal.



962

CARL R. SCHMIDT

President Pacific Coast Paper Box Manufacturers Association
Vice-President Schmidt Lithograph Co., San Francisco

NO HIGHER TRIBUTE---

could be paid to the ABILITY and the INTEGRITY of CHRIS KUPPLER'S SONS as Building Contractors than the privilege of constructing these three fine mills.

Washington Pulp & Paper Corporation, Port Angeles

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CHRIS KUPPLER'S SONS by reason of the valuable experience gained in the building of these outstanding mills are peculiarly well fitted to efficiently handle pulp and paper mill construction in the Pacific Northwest and Alaska in which actual experience by the contractor counts so much toward the successful operation of the plant.

Grays Harbor Pulp Co., Hoquiam, Now Under Construction

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Specializing in Pulp and Paper Mill Construction

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GENERAL BUILDING CONTRACTORS
ESTABLISHED 1889
PORT ANGELES and HOQUIAM, WASH.

Financial References—First National Bank, Seattle—First National Bank, Port Angeles, Wash.

New Uses of Paper in 1927

WITH the present trend toward the highest point of efficiency in the handling and marketing of products, together with the prevailing decrease in the size of individual unit purchases, makers of paper are discovering constantly increasing fields in which their product is the most efficient agent of distribution. Each year sees an increase in the list of products newly introduced to the public in wrappers or containers made of some form of paper. Paper containers are replacing wood, metal, glass and cloth. In fact, in the growing utilization of paper since its original introduction as a writing surface, one is reminded of the development of rubber, which, since its introduction to the civilized market as the eraser tip of a pencil, has become one of the basic constituents of modern manufacture.

The Field of Paper

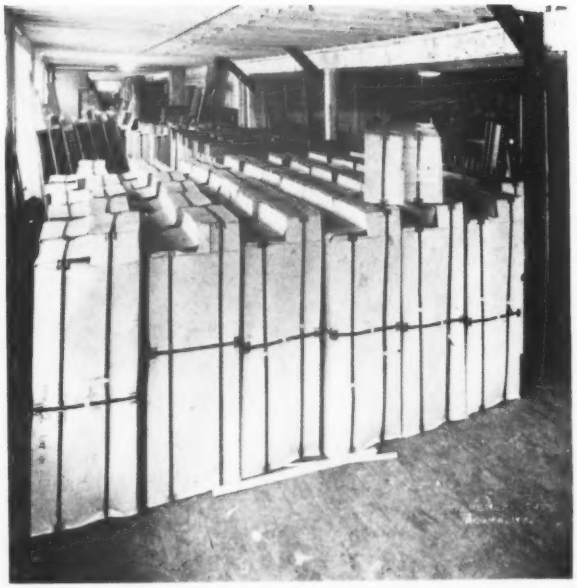
A glance at the modern system of marketing will convince one of paper's scope. On a large scale, printing paper, canned goods, ready-cut lumber, and packed fresh fruit have been newly introduced in fibre-board cartons. Even in shipments of smaller articles of furniture, fibre cartons are replacing the wooden packing crate in vogue until recently. The humble paper bag, formerly reserved for purchases of trivial value, has become one of the established containers of commerce. On a smaller scale, individual items of merchandise, particularly in the grocer's field, are now offered in individual paper or board packages. When we consider the customary layer of waxed paper within the container, the ordinary wrapping of the package, and the placing of the purchase along with other articles in a heavy paper "shopping bag," four layers of paper are found to enclose each item of the housewife's purchase.

Within the past few years paper has found a steadily increasing role as the container of liquid or semi-liquid products. A liquid-tight paper container at first thought seems like an anomaly, but the fact remains that containers of this kind have not only proved their worth but are displacing glass and metal steadily in many fields. Increasing markets are likewise being developed for paper intended for sanitary purposes, since the first introduction of paper towels. Today the ordinary beauty parlor is finding increasing uses for paper tissue in the different applications of cosmetics to the face.

Progressive Experimentation

That paper and its products have not yet attained the peak of their possible utilization is seen in the serious thought spent upon the possibilities of still further use, as in the recent foreign experiments to discover the practicability of paper clothing. Many of these schemes will undoubtedly prove too far-fetched to carry out, but the probable proportion of successful experiments ought to render them worthy of consideration.

With the increasing role which paper is playing in American fields of industry, the paper makers of the Pacific Coast have kept up with the growing demands during the past year, introducing, meanwhile, new types of containers particularly suited to western products. Some of these have gone past the experimental stage; others, in spite of local resistance and prejudice, have shown themselves to be more practical than the type of container which they displaced.



Even Lumber is Now Shipped in Fibre Cartons. The Illustration Shows Some of the 166 Cases of Cut Lumber for Mantels Which Were Loaded for England in December, 1927. Each Case Contained 66 Pieces of Cut Lumber and Weighed 188 Pounds When Packed

As might be expected in a district in which the annual fruit pack is of primary industrial interest, the most significant introduction of new pulp and paper products has been in the development of containers for the shipping of fruit, fresh, dried and in cans. Owing to their proximity to Alaska, the Pacific Coast carton makers have naturally turned their attention to the Alaskan salmon pack. The past year has seen the use of new solid fibre containers upon an experimental basis, and also the packers' first general acceptance of several types of containers never before entirely popular.

Better Merchandizing Unit

Of new containers evolved by Pacific Coast manufacturers during the past year, the apple container, introduced by several leading paper box makers of the Northwest, is of interest. The apple packages follow the line of the ten-pound unit paper boxes for potatoes, successfully brought out in Utah several years ago. The new apple cartons have the content of one-quarter or less of the standard apple box. They do not eliminate the wooden packing case, but they do open new markets for apples by providing a more convenient merchandising unit. The containers are all of stiff board, ventilated by round holes in every side, and are made in forms ranging from a simple one-piece box to a two-piece carton of patented pattern. The introduction of the new apple box in the past year was largely experimental, and, while it did not meet with

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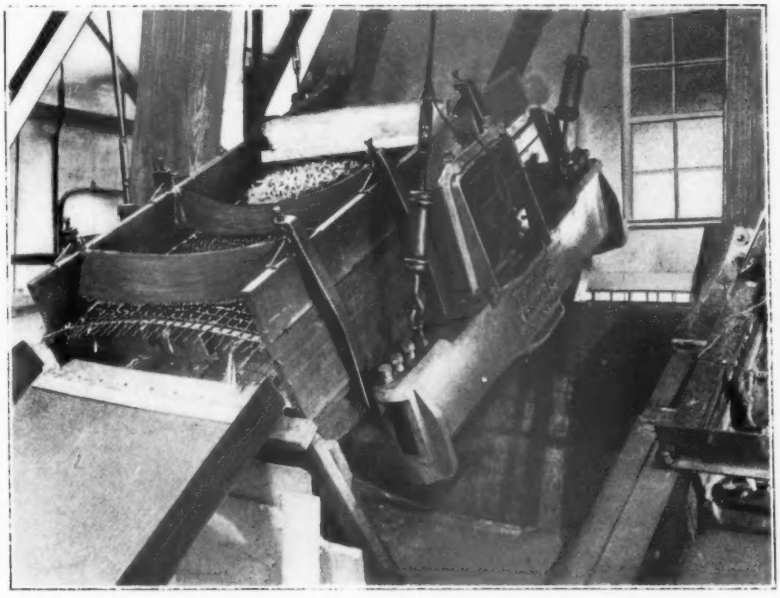
FOR SCREENING WOOD CHIPS

—Better, Faster Screening at Less Cost



A Screen Supreme operating in one of the largest Pacific Coast Pulp Mills

Economical Features of the Screen Supreme

MAXIMUM CHIP CAPACITY—1 square foot of the SCREEN SUPREME does the work of from 10 to 15 square feet of the ordinary shaking screen.

MINIMUM FLOOR SPACE—The large capacity of the SCREEN SUPREME permits the use of a screen taking up small floor space.

NO BEARINGS, SHAFTS, GEARS, PULLEYS OR BELTS—Friction and necessity for lubrication are eliminated in the SCREEN SUPREME by the application of the principle of electrical vibration which makes the screen a self-contained unit.

RAPID VIBRATION OF SCREEN SURFACE—Screen vibrates 3600 times per minute, keeping load in rapid motion over entire surface of screen cloth, and giving very high screening efficiency.

EASE OF INSTALLATION—The SCREEN SUPREME is easily installed requiring connections with roof timbers at only four points. Only other connection is with power line.

LOW OPERATING COST—Power consumption of the SCREEN SUPREME is unusually low requiring from 1/3 to ½ horsepower, depending upon the size of screen. Practically no repairing is necessary except replacement of screen cloth.

For detailed information write

THE TRAYLOR VIBRATOR COMPANY

1400 Delgany Street, DENVER, COLORADO

the general approval of the packers, the pioneers in the field expect that it will be generally accepted in a subsequent season.

The apple growers had, in 1927, their first good year in a long time, and they were reluctant to venture any of their profits upon an innovation in packing. With good crops continuing for the next year or two, a general acceptance of the new apple container is possible. If adopted for the handling of the finer portion of the Washington crop alone, 12,000 tons of board would probably be necessary to supply the annual demand.

Another innovation in the packing of apples, a more successful one, is found in the introduction of paper pads which fit the inside of the apple box and prevent bruising the fruit in long shipments. These are used especially for export trade.

The fibre container for canned fruit and vegetables has been in use in California for some time, but the last year is the first that has seen it generally successful in the Northwest.

Fibre Container Gaining

Here, in the heart of the wooden box industry, the fibre container has had a hard fight to make, resistance and prejudice to overcome. In the last year, however, 785,000 fibre cases were used, representing a 60 per cent increase over 1926. Now 30 per cent of the Northwestern pack is shipped in fibre containers, and prospects are high for an increased percentage.

When asked for his opinion on the success of the fibre container in this field, the head of a Seattle canning company spoke very optimistically of its possibilities:

"We have found that the fibre container is superior to the wooden in three respects: (1) a saving on freight both ways, amounting to several hundred pounds on the carload; (2) an advantage in appearance through the readiness with which advertising matter may be printed directly on the container; and (3) greater convenience in warehouse displacement. We have found the fibre container satisfactory in even the longest shipments, and while it may never replace completely the wooden case, we feel that it will soon predominate in the packing field."

Savings for the Shipper

Along with the struggle to win the fruit canners to the fibre container is the fight to change the salmon packers from wooden case to fibre. This is a little more difficult, owing to some circumstances peculiar to the salmon pack. Some real study has been necessary to meet the conditions, but there is nothing which will ultimately bar the fibre container from this field. Perhaps the greatest obstacle is to educate the trade away from customs long established.

That the fibre container is successful in encroaching upon the salmon canning industry is evidenced by an order recently placed by an Alaskan cannery for 72,000 wooden cases and an equal number of fibreboard. The cases were packed under the same conditions and shipped to Seattle. The fibre containers came through in every respect as satisfactorily as the wooden cases and effected net savings of $26.30 on each thousand cases. There is also a saving of $60 to $75 per car on shipments to Eastern states.

Further progress was seen during the year in the shipments of printing paper in cartons instead of in wooden cases, again in the face of discouraging criticism. In the earlier shipments the cartons had not been perfected, but time and experience have improved the containers, and their acceptance by the trade is becoming general.

In food handling, paper was put to several new uses within the year and proved popular in each case with both merchant and public. One interesting achievement was the introduction of paper wrappers for individual fillets of fish. The fillets are wrapped in a parchment paper which will stand the disintegrating effect of water, packed in containers of metal, or of paraffine-treated board, and shipped to any point in the country. Under this system the market for fish is not only extended, but it is stabilized.

Wrapping Vegetables

Other new wrappings have been used with great success in marketing vegetables. Lettuce is now wrapped for shipment and marketed in a kraft paper heavily waxed to withstand the effect of water. A new paper vegetable parchment has been developed for the handling of celery.

In the field of dried fruits, the year saw continued progress in the adoption of paper containers, particularly in the state of California. The raisin industry has adopted paper as a container for its product in three forms—bulk, bags and cartons. The bagged and cartoned raisins are also shipped to market in fibre shipping cases. Among the California prune packers the carton has steadily grown in favor since its original introduction about 1920, when it was rather dubiously received. It has been adopted also by many of the Oregon prune packers. Strong talking points are seen in favor of the paper carton in the fact that, sealed on the outside as well as the inside, its contents keep moist longer than when packed in bulk, and, further, it removes from the grocer's customer the old temptation to pilfer a handful of dried fruit from the opened box while awaiting the filling of his order.

For Marketing Fruit

Cellophane, or transparent paper, has likewise gained in favor in the fruit industry of the West, especially in the packing of dried prunes, apricots, peaches and glace fruits. The higher grade of packed fruit lends itself more readily to display purposes when put up in this form. "A show-case of their own" has become the slogan of a company specializing in this wrap.

In the handling of fresh fruit there has also been progress. In the Northwest, oiled papers developed through a special process were introduced successfully for wrapping apples, peaches and pears. The cantaloupe producers of the Northwest have taken a tip from the citrus growers of California and are now using heavy paper cones to protect the growing fruit from the frost.

Shipping Nursery Stock

Innovations in the use of paper were not confined to the field of food products. At least one Pacific Coast paper jobber found a new use for paper in shipping nursery stock which was formerly packed in moss and burlap. Local nurserymen are now packing the young shoots in wadded paper. Burlap sacks in which many wooden articles, such as broom-handles, have generally been shipped are being replaced by paper bags. Large paper containers are used to hold the poisin bait distributed in large quantities to eliminate that scourge of Northwestern gardens, the earwig. A Pacific Coast radio company has adopted for its radios and loud speakers paper shipping cases, braced especially to sustain the weight of the contents. In every

Ten Fibre Cases at the End of a Journey from Stockton, California, to New York by Rail, from New York to New Orleans by Steamer, and from There to Los Angeles by Rail. One Split Seam in One Case Was the Only Damage. Of Ten Wooden Cases Made in a Parallel Shipment Five Were Badly Damaged and Recoopered in Transit

case the field was entered only after considerable study of the problem.

Besides entering new fields of utility, paper has in the last year been accepted by the public more generally. Items of merchandise which have been on the market in different stages of development for several years gained greatly in prestige in 1927. The general adoption of the paper cup and liquid container is interesting as an example of what seems at first an absurd innovation. It took an extensive advertising campaigin to keep the "Dixie Cup" before the public, but it has practically supplanted the ice cream cone among juvenile purchasers. Paper cups also find wide use as containers for individual portions of jelly and honey in restaurant service. The growing use of waxed paper for general household purposes is seen in the increasing volume of purchases of this article by housewives. One Portland jobber considered 5,000 rolls of this article to be a very adequate stock a few years ago. Today this house supplies annually seven to ten carloads in its territory.

Several reasons can be found for the increasing use of paper in all fields. Paper provides the efficient container or wrapper. Today's business must find, in the face of hand-to-mouth buying, some convenient units for merchandising. The housewife buys food in small quantities and demands more frequent deliveries. Hence the purveyor must have ready packaged units in order to give service. Another factor is the public's increasing demand for sanitary safety. Paper wrappers or containers nullify the danger coming from repeated handling. The adaptability of paper to advertising purposes helps to increase the consumption of the product. In the larger fields fibre containers offer savings in freight and afford more convenient units for handling.

New uses for paper are being found daily. Initiative has increased the field, for local prejudices have had to be overcome and other forms of container have had to be eliminated in many instances. All this progress could not have been obtained without real enterprise, and future progress will depend largely on the continuance of that enterprise.

Value of Canadian Pulpwood Production

Year	Pulpwood Used	Pulpwood Exported	Total Production
1921	$ 38,283,262	$14,617,610	$ 52,900,872
1922	40,375,599	10,359,762	50,735,361
1923	43,594,592	13,525,004	57,119,596
1924	44,241,582	13,536,058	57,777,640
1925	48,012,602	14,168,935	62,181,537
Total	$214,507,637	$66,207,369	$280,735,006

What They Think About 1927

OVERPRODUCTION and low prices gave manufacturers of pulp and paper their greatest concern in 1927, if one can judge by studying comments made by leaders in the industry all over the country. In the same breath, however, those who offered comments added that, while the situation was not one over which to make merry, there was no real cause to be alarmed.

"What factors have had most to do with determining the pulp and paper market during 1927?" This was the question asked. Enlightenment was also sought on what the future had in store. It is surprising what a range of opinions were offered. Analysis of the comments, however, simmers down to what has been condensed into the first paragraph above.

Supply and Demand

"The factors which have had most to do with determining the pulp and paper market in North America during 1927 are supply and demand," remarks one man. "Increased efficiency of existing machinery and new machinery have added to the output of paper to an extent that is considerably out of proportion to the increases in consumption. This is the 1927 trend. The future prospects of the industry will depend almost entirely upon how well the two fundamental factors are controlled."

This statement, perhaps as brief and sharply defined as any received, is taken to be a fair sample of opinion.

"Excessive over-production determined the pulp and paper market in 1927," remarks a president of another big paper company. "In my opinion the new mills built on this continent during the past year will continue to produce this same effect.

"I am of the opinion that the present market situation will have a depressing effect upon new construction and that very few additional machines will be installed during the coming year."

A Healthy Situation

This man also reflected the opinion of the newsprint industry. "With the price of newsprint continuing at $65," he said, "I believe that with a cessation of new construction consumption will practically overtake production within the next three or four years."

Another prominent newsprint man saw in his field no cause for alarm, even calling it a healthy situation. "We are operating in the industry at about 80 per cent capacity. Other industries operating at this capacity or even less consider such a status normal. At 80 per cent capacity the newsprint industry has a desirable measure of flexibility. If consumption continues to increase at the same rate as it has for several years, present machines will run at capacity in about three years. The over-production situation is temporary at best, but no new machines should be added for at least three years."

Another newsprint man adds that "the old principle of supply and demand still governs and seemingly no combination has ever been able to overcome it. In spite of the fact that service bureaus have indicated certain market conditions, there are those manufacturing newsprint who disregard manufacturing costs, and the disturbance in the market is so far-reaching as to almost destroy some manufacturing conditions."

Another manufacturer gives a frank opinion on the export situation. He states that the opening of new markets through export has taken care of considerable of the surplus, but adds that the new market for the American mills, interpreted in terms of world production, means only that the American mills have displaced tonnage from mills of the foreign countries. The result is unfavorable market conditions so far as price is concerned.

This man goes on to say: "It seems to the writer that the real issue connected with present prices resulted from the fact that Norway, Sweden, Germany and Finland were exporting to America, landing newsprint on the Atlantic, Pacific and Gulf coasts at practically the cost to the manufacturer.

"Some of the manufacturers took too narrow a view of the situation and refused to allow this tonnage to be placed. Instead of allowing this limited tonnage to enter, they immediately went into the market and met the situation with price. This only added to the difficulty and no more tonnage was sold than would have been sold otherwise at reasonable prices.

Effects of Low Prices

"Ultimately, I believe, the tremendously low prices prevailing in seaport cities will bring the manufacturer to realize the error of his ways, particularly when he begins to figure his earnings for the year. It is then that some of these manufacturers may be impressed with the fact that low price conditions will result eventually in disaster not only to his own mill, but to others."

Turning now to some comments from men more concerned with pulp production, both in the United States and in the Scandinavian countries, we find that the pulp manufacturer is faced with keen competition and not too bright a future.

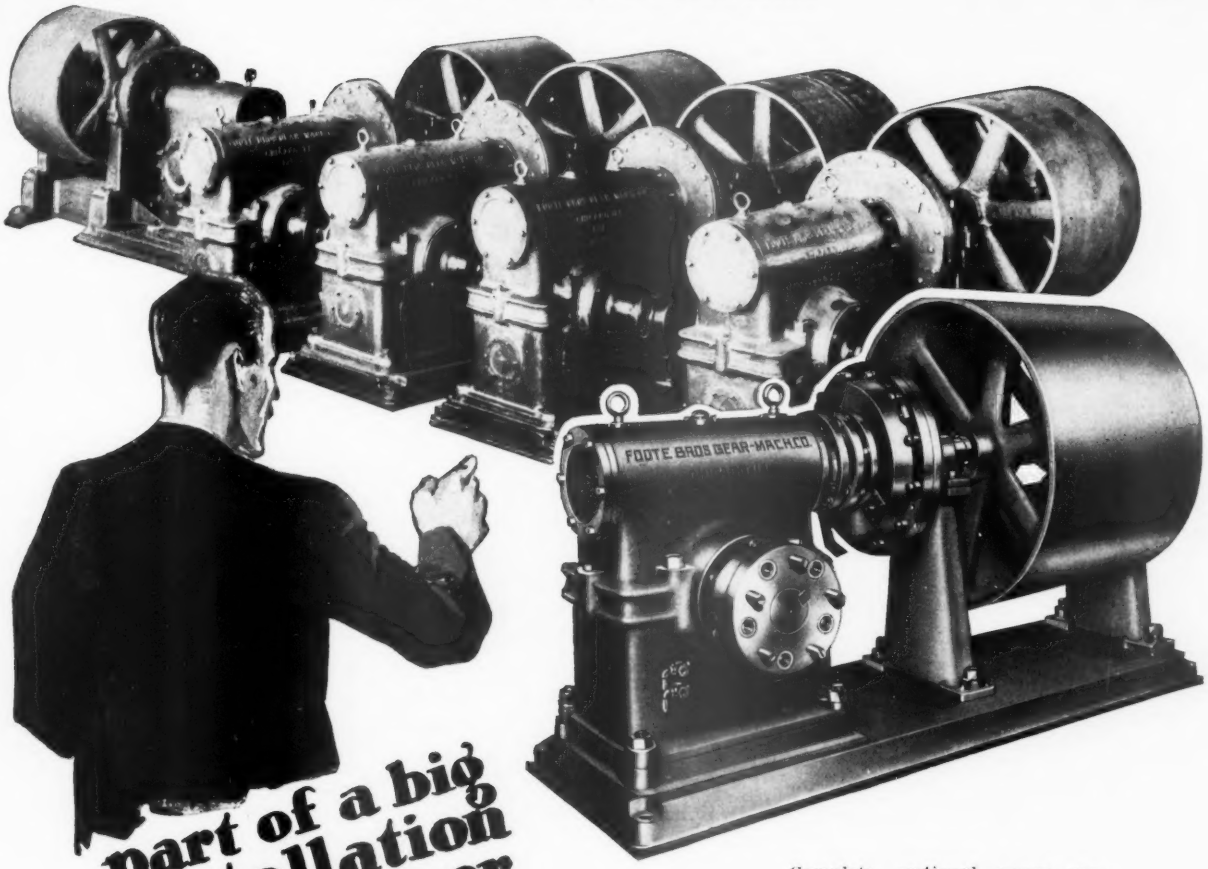
One man states: "There has been a slight increase from a percentage standpoint in sulphite and sulphate pulp production in Scandinavia and continental Europe. Despite the fact that the pulp market seems somewhat overstocked and burdened with low prices, there is apparently no effort to curtail production.

No Cause for Alarm

"Groundwood mills in Scandinavia have curtailed production to some extent, but this reduction applies principally to mills affiliated with a groundwood association formed for protective purposes."

Pulp brokers point out that importation of chemical and mechanical pulps to the United States during 1927 shows a slight increase from a percentage standpoint. Although the market was dull at the close of the year, the pulp buyers believe that unsold tonnages will be taken up during the winter, but that low prices will prevail. Another comment from one in close touch with pulp production is: "In my opinion it is unwise, at least for the present, to make further increases in pulp production. I see no cause for alarm in the situation because paper production seems to have increased

(Continued on page 112)



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Water Applications Mark Activity

By R. K. TIFFANY
Washington State Supervisor of Hydraulics

APPLICATIONS to appropriate water filed in the office of the Washington State Supervisor of Hydraulics during the year 1927 indicate sustained activity in agricultural and industrial developments. Applications for domestic use and irrigation have been numerous, most of these, however, being for small individual developments.

There has been greater activity along the line of appropriations for industrial use than ever before in the history of the state, as evidenced by the accompanying list. Speculative filings for power purposes, which were numerous so long as the fee required for examination and filing applications was only $5.00 each, have been practically eliminated by the requirement of substantial fees based upon the amount of water sought to be appropriated under the amendment to the Water Code, passed in the 1925 Special Session of the Legislature.

Power Developments Under Way or Completed: Chief among these is the Chelan River development, made by the Chelan Electric Co., a subsidiary of the Washington Water Power Co. Construction on this project was started in April, 1926, and the first unit of 34,000 h.p. was placed in operation about September 1st, 1927. Installation of the second unit of equal size is under way and will be completed in the spring of 1928.

The capacity of the Baker River project of the Puget Sound Power & Light Co. was increased by raising of

(Continued on page 124)

APPLICATIONS TO APPROPRIATE WATER FOR INDUSTRIAL OR POWER USES FILED IN THE OFFICE OF THE WASHINGTON STATE SUPERVISOR OF HYDRAULICS DURING THE CALENDAR YEAR 1927

(In the first column is shown the serial application number; in the second column, permit number, if permit has issued)

Appli. No.	Per. No.	Name of Applicant	Name Stream	Amt. Water	Amt. Power H. P.	Est. Cost	Proposed Use
1961	.....	Wm. H. Hopkinson, Aberdeen	East fork of Humptulips	50 c.f.s.	.....	$ 700,000	Pulp & Paper
1963	.....	E. G. Hopson, Portland	Columbia River	15,000 c.f.s.	20,000	4,000,000	Power Development
1977	.....	S. L. Dennis, Raymond	Willapa River	30 c.f.s.	.....	.....	Industrial Development
1968	930	City of Aberdeen	Elliott Slough Creek	5 c.f.s.	.....	700,000	Gen. Industrial Use
1970	932	City of Aberdeen	Mooney Creek	5 c.f.s.	.....	700,000	Gen. Industrial Use
1969	931	City of Aberdeen	Wedekind Creek	5 c.f.s.	.....	700,000	Gen. Industrial Use
1972	934	City of Aberdeen	Wynooche River	110 c.f.s.	.....	700,000	Gen. Industrial Use
1973	916	City of Tacoma	Puyallup River	625 c.f.s.	.....	.....	.....
1974	917	City of Tacoma	Kapowsin Creek	80 c.f.s.	.....	.....	.....
1975	R.58	City of Tacoma	Puyallup River	50,000 acre feet	.....	2,000,000	Gen. Industrial Use
1976	918	City of Tacoma	Voight Creek	100 c.f.s.	.....	.....	.....
1979	.....	Tom Mairs, Tacoma	White River	150 c.f.s.	.....	1,000,000	Gen. Industrial Use
1982	.....	Pacific Dev. Co., Olympia	Nisqually River	1,050 c.f.s.	33,400	2,000,000	Power Development
1988	.....	Wm. H. Hopkinson	West fork of Humptulips	50 c.f.s.	2,000	200,000	Industrial Development
1990	.....	City of Port Townsend	Little Quilcene River	30 c.f.s.	.....	500,000	Industrial Development
1991	1021	City of Port Townsend	Quilcene River	30 c.f.s.	.....	1,000,000	Industrial Development
1992	R.62	City of Port Townsend	Little Quilcene River	750 acre feet	.....	.....	.....
1994	.....	City of Hoquiam	East fork of Humptulips	10,000 acre feet	.....	1,500,000	Industrial Development
2005	.....	City of Hoquiam	East fork of Humptulips	95 c.f.s.	.....	300,000	General Industrial Dev.
2006	.....	City of Hoquiam	East for of Humptulips	7,400 acre feet	.....	130,000	General Industrial Dev.
2010	.....	City of Hoquiam	Chehalis River	300 c.f.s.	.....	2,660,000	General Industrial Dev.
2016	.....	City of Hoquiam	Humptulips River	60 c.f.s.	.....	1,100,000	General Industrial Dev.
2013	.....	J. E. Buckingham	Wilson Creek	25 c.f.s.	.....	100,000	Industrial Development
2014	.....	J. E. Buckingham	Willapa River	40 c.f.s.	.....	150,000	Industrial Development
2015	.....	J. E. Buckingham	Fairchild Creek	20 c.f.s.	.....	100,000	Industrial Development
2018	.....	F. E. Bertrand	Diabase Creek	150 c.f.s.	.....	.....	Power & Industrial
2019	.....	F. E. Bertrand	Bacon Creek	400 c.f.s.	.....	.....	Power & Industrial
2043	.....	Joseph Roane	Toutle River	300 c.f.s.	9,500	1,125,000	Power Development
2044	.....	Joseph Roane	Toutle River	36,000 acre feet	.....	400,000	Power Development
2045	.....	Joseph Roane	Toutle River	15,000 acre feet	.....	300,000	Power Development
2046	.....	Joseph Roane	Toutle River	96,000 acre feet	.....	800,000	Power Development
2047	961	C. W. Cottrell	Washougal River	150 c.f.s.	596	15,000	Power Under Constrctn.
2051	.....	Cascade Power Co.	Lake Isabel	50 c.f.s.	2,500	1,250,000	Power, Public Utility
2052	.....	Cascade Power Co.	Lake Isabel	13,700 acre feet	.....	100,000	Power, Public Utility
2053	.....	Cascade Power Co.	Wenatchee River	2,000 c.f.s.	75,000	7,500,000	Power, Public Utility
2054	.....	Cascade Power Co.	All Streams trib. to Wen. and Fish Lake	200,000 a.f.	.....	750,000	Power, Public Utility
2058	R.59	Rainier Pulp & Paper Co. and Simpson Logging Co.	Goldsborough Creek	150 acre feet	.....	.....	Paper & Pulp
2063	998	Dana Roberts	Green River	40 c.f.s.	.....	20,000	Paper & Pulp Industry
2064	.....	H. C. Hansen	Johns River	20 c.f.s.	500	250,000	Power
2067	.....	City of Hoquiam	East Hoquiam	50 c.f.s.	.....	200,000	Industrial Development
2068	.....	City of Hoquiam	East Hoquiam	5,000 acre feet	.....	85,000	Industrial Development
2078	.....	City of Aberdeen	Van Winkle Creek	600 acre feet	.....	160,000	Industrial Development
2118	.....	Walter W. Gilkey	East fork of Nookachamp R.	5 c.f.s.	.....	.....	Industrial Development
2119	.....	Walter W. Gilkey	Big Lake	5 c.f.s.	.....	.....	Industrial Development
2125	.....	D. Tonneson	Chambers Creek	20 c.f.s.	.....	20,000	Industrial Development
2126	.....	Tacoma Land & Imp. Co.	Clear Creek	10 c.f.s.	.....	50,000	Industrial Development
2137	.....	City of Port Angeles	Elwha River	150 c.f.s.	.....	250,000	Industrial Development
2165	.....	H. D. Barto	Carbon River	225 c.f.s.	20,000	2,000,000	Power Development
2169	.....	City of Hoquiam	Wishka River	35 c.f.s.	.....	50,000	Industrial, Pulp & Paper
2173	.....	A. E. Barry & Geoffrey Winslow	Skidmore Creek	3 c.f.s.	.....	20,000	Industrial Development
2175	.....	A. E. Barry & Geoffrey Winslow	Austin Creek	3 c.f.s.	.....	20,000	Industrial Development
2184	.....	E. M. Chandler & Henry L. Gray	Dosewallips River	150 c.f.s.	4,000	1,250,000	Power, Pulp & Paper
2185	.....	E. M. Chandler & Henry L. Gray	Dosewallips River	26,000 acre feet	.....	700,000	Power, Pulp & Paper
2213	.....	Allen B. Engle	Duwamish River	16 c.f.s.	.....	50,000	Industrial Development
2191	.....	Hugh L. Cooper	Clarks Forks, Columbia River	8,500 c.f.s.	260,000	17,600,000	Power for Mfg.
2192	.....	Hugh L. Cooper	Clarks Forks, Columbia River	6,000 acre feet	.....	.....	.....
2216	.....	Pend Oreille Lead & Zinc Co.	Clarks Forks, Columbia River	7,000 c.f.s.	50,700	7,000,000	Power for Min. & Mfg.
2217	.....	Pend Oreille Lead & Zinc Co.	Clarks Forks, Columbia River	70,000 acre feet	.....	.....	.....
Totals	.....	58 Applications.	37,132 c.f.s.	536,600 acre feet	478,196 H.P.	$62,205,000	— Total Estimated Cost

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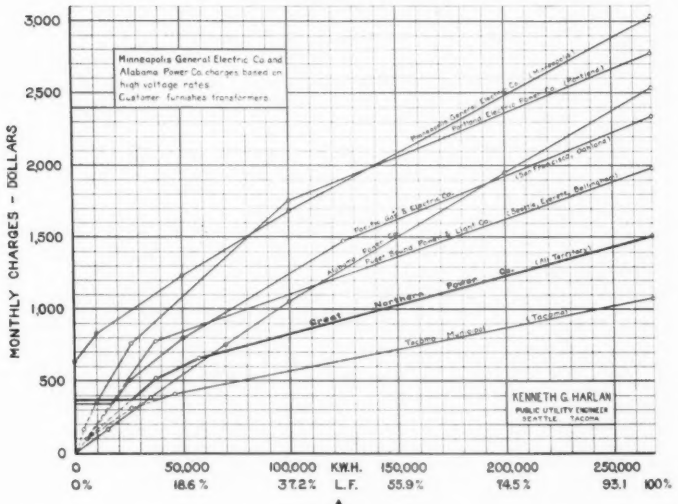

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Sulphite Progress on the Coast

"The Need for Emphasis Is on Quality"

By J. B. WILT
Pacific Coast Representative, Stebbins Engineering Co.

SULPHITE manufacture on the Pacific Coast has developed with remarkable rapidity in the past year or more. Many of the largest manufacturers of sulphite papers have materially speeded up their machines or otherwise increased their mill capacities. In addition to the new machines installed in some of the older mills, new mills for the production of sulphite pulp have come into existence. Most outstanding is the Rainier Pulp and Paper Co., at Shelton, Wash., with a daily capacity of 135 tons of bleached sulphite. The Grays Harbor Pulp Co., at Hoquiam, Wash., now building, will have a daily capacity of 150 tons of bleached sulphite. The quality pulp produced by the Shelton mill is equal to and in most instances far superior to the very best grades of spruce sulphite made in the East. The results reflect credit on the mill organization which consists of the most practical and technical management obtainable.

The Spaulding Pulp and Paper Co., at Newburg, Oregon, began production in November with the first two digester units of a project designed for the ultimate capacity of 200 tons. This mill is producing daily from 40 to 50 tons of high grade unbleached sulphite.

These are the only two new sulphite pulp mills on the Pacific Coast coming into production in 1927 and it is a matter of significance to the entire Coast that both mills should lay much stress on quality.

More sulphite mills are proposed for 1928, but the mortality of these projects may be high. There is no cause for alarm about an overproduction of sulphite pulp when it is remembered that eastern mills are rapidly exhausting their pulpwood supply, a factor which will compel them either to move to a new wood source or to go on the market for a pulp supply to keep their paper mills in operation. Many eastern mills are already curtailing production by going into higher grades of paper. This step in turn will create a demand for higher grades of pulp. There may be danger of an overproduction of low grade sulphite pulp, but there is no cause to worry if every effort possible is made to produce quality rather than quantity.

Pacific Northwest mills cannot hope to survive if they produce a low grade sulphite. With the market off as it is at present and with Pacific Coast unbleached sulphite sold in the Midwest as low as $46.00 a ton delivered, $13.00 to $14.00 freight rate deducted, it requires no great computation to perceive how long Pacific Coast mills can last on low grade pulp when the aggregate production cost is $38.00 a ton.

Some progress toward quality production has been made during the past year. A few major points of improvement are set forth in the succeeding paragraphs:

Wood Cleaning in the Wood Room

During the past year particular attention has been given to the handling and cleaning of the wood before passing it into the digesters and on into the system where the removal of dirt becomes more and more difficult. Many of the operators who have previously racked their brains in trying to separate the dirt from the fibre after the wood was cooked are learning that it is most successfully accomplished in the wood room.

Better Chemical Control

It is apparent to the experienced operator also that particular attention should be given to the manufacture of sulphite acid which is essential in the production of uniform pulp. The cooking acid has much to do with the quality of sulphite and should contain the right proportion of free and combined to suit the wood condition and the grade of pulp desired. The formation of sulphuric acid and sulphate which are insoluble and remain in the acid as a white precipitate gives a great deal of trouble in the acid and in the digesters. Accurate chemical control of the acid plant and the constant watchfulness on the part of the entire operating force are the only means of guarding against the formation of undesirable chemical compounds.

More Scientific Cooking

Cooking is the next important step in the manufacture of sulphite. In addition to acid of the right strength and proper constituents it is desirable to have a constant steam pressure. It has been proven by actual cooking tests that the yield may vary 5 to 20 per cent with the temperatures and operation of the digesters. This also reflects in the quality of the pulp and incidentally the production costs. Correct purification of the fibre should take place in the digesters and unless properly controlled no treatment thereafter will bring out the strength and produce the quality of paper that would be otherwise produced.

Better Washing in Blow Pits

The next important step, that of washing the pulp in the blow pits, is receiving more attention. Utilization of waste heat while blowing the digester to heat the wash water has been found to accelerate washing and also aids in removing pitch troubles which often show up in the bleached stock in the form of black specks, especially after the pulp or paper passes over the dryers.

Better Screening

Riffling and screening are also receiving more attention here on the Coast. The British Columbia Pulp and Paper Co. and some others have completely changed their screening equipment during the past year as they realize that nothing short of the best equipment available will enable them to produce the quality of sulphite demanded by the trade.

Save-All Installations

Interest in the waste problem is becoming more intense and save-alls are being installed in order to recover the fibre that has been carried away with the white water to pollute our rivers and lessen profits for the mills.

High Density Bleaching

New high density bleaching plants, developed during the last few years, are rapidly replacing the old, inasmuch as they require less space and the pulp is bleached in one-half of the time it was formerly. Besides re-

(Continued on page 128)

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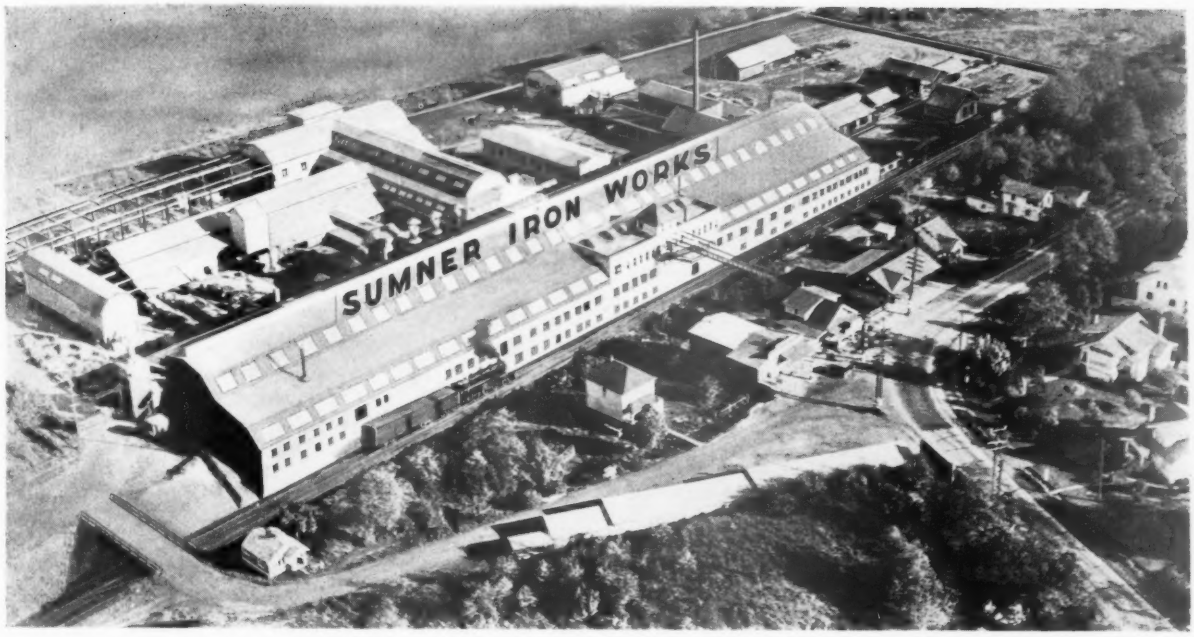

PURSUANT to the announcement made some months ago the SUMNER IRON WORKS of Everett, Washington, has entered into the manufacturing field of Pulp and Paper Mill Machinery.

The rapid expansion of the Pulp and Paper manufacturing business upon the Pacific Coast, has made it advisable for this plant to embark upon the manufacture of this class of machinery, in addition to its well-known line of Saw and Shingle Mill Machinery.

And our location on this West Coast is a decided advantage in the manufacture and delivery of Pulp and Paper Mill Machinery for Western customers.

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Forestry Resources of the Pacific

Species, Stand, and Growth Characteristics of Timber in Western States, British Columbia and Alaska*

FIFTY per cent of all the standing timber in the United States is west of the Rocky Mountains Sixty-two per cent of this is in the two states of Oregon and Washington. Sixty-six per cent of all the timber in the two states, or 25 per cent of the nation's standing timber, is Douglas fir. Timber now standing in all the states west of the Rockies total approximately 1,140 billion board feet.

Trees grow faster, to greater height, and in thicker stands in the Pacific Northwest than in any other section of America. A Douglas fir forest will yield from 40,000 to 150,000 board feet per acre, while an acre in an eastern or central state will produce but 5,000 to 10,000 board feet. The largest Douglas fir tree known is more than 15 feet in diameter, and specimens from 10 to 12 feet in diameter and 325 feet high are not uncommon.

Douglas Fir Region

The stand of Douglas fir totals about 634 billion board feet. Of this, about 525 billion board feet are in Oregon, Washington and British Columbia. In Washington, Douglas fir comprises 48 per cent of the total timber stand; in Oregon, 62 per cent, and in British Columbia, 21.8 per cent.

The existing stand of Western hemlock approximates 155 billion board feet, about 15 per cent of the total forest stand of the Pacific Northwest. Mature trees attain a height of from 125 to 200 feet and a diameter of from two to five feet breast high. West Coast hemlock is one of the most prolific seed producers among the trees of the West Coast. Some seed is produced every year and heavy crops at frequent intervals. Also it is one of the most tolerant trees, thriving as a young tree as the understory of a mature stand of intolerant species. These qualities aid in its steady and comparatively rapid reproduction. The cut of this species in 1926 totaled about one and one-half billion feet.

Sitka Spruce

Sitka Spruce, also called Tideland Spruce, grows only along the Northwest coast of North America. It is the largest of the seve species of spruce growing in the United States. It is found along a narrow strip of the Pacific Coast, from Cook Inlet in Alaska to Mendocino county, Calif., its greatest distance from the ocean being not more than 200 miles. The bulk of the spruce is within forty miles of the ocean shore. Commercially, the wood is not found south of Coos Bay, Oregon.

The stand of Sitka spruce is estimated to be about 40 billion board feet. Of this, from 15 to 18 billion feet is in Alaska, 15 billion feet in British Columbia, 6 billion feet in Washington and 4 billion feet in Oregon. It grows in heaviest stands in the northwestern part of the Olympic peninsula and the Grays Harbor region in Washington, and in the northwestern part of Oregon. The annual lumber production of Sitka Spruce is estimated at about 500 million board feet.

Sitka Spruce reproduces itself readily from seed, good seed crops being produced at intervals of from three to four years. If fire is kept out of the young growth the seedlings grow very rapidly. Second-growth stands, at 100 years of age, have been found to average about 100,000 board feet to the acre—indicating that the rate of growth is about 1,000 board feet per acre a year.

Western red cedar grows principally in the moister locations and reproduces itself entirely from seed, yielding some seed almost every year, with heavy seed falls at intervals of from 3 to 4 years. The present stand of red cedar in Washington, Oregon, British Columbia, Northern Idaho and Western Montana, is estimated at approximately 180 billion board feet. It is being cut at the rate of about one and one-half billion board feet per year.

Western white pine, or Idaho white pine, is most abundant in Idaho, where it is found in almost pure stands. It is rarely found in pure stands elsewhere. It is found over a wide range in northern Idaho, northwestern Montana, south British Columbia, Washington, Oregon and northern California. The stand of Western white pine is estimated to be from 20 to 25 billion feet. Eighty per cent of this stand is in northern Idaho and northwestern Montana. White pine reproduces from seed only, the seed crops occurring about every two years. Second growth on full stands yields about 15,000 board feet per acre at 60 years, 42,000 feet at 100 years and 54,000 feet at 140 years.

Sugar Pine

Sugar pine, in commercial range, is found on the Southern Cascades, the Siskiyous of southern Oregon and north California, and the Sierra Nevada mountains of California. It appears sparingly in the Coast range of southwestern Oregon and northwestern California. Sugar pine is always in mixed stands. In its commercial range it is found associated with Douglas fir, Western yellow pine, incense cedar, white fir, red fir and lodgepole pine. It is the largest of the pine trees, attaining a height up to 200 feet and diameters of six and seven feet. Average mature trees run from 3½ to 4½ feet in diameter. Reproduction is from seed only. Under favorable conditions, Sugar pine grows very rapidly, and will attain a diameter of 24 inches in 100 years.

Pondosa Pine

Western yellow pine, also known as Arizona white pine, Pondosa pine, and California White pine, is found over a wide area, from the interior of British Columbia southward to northern Mexico, and from the Pacific coast eastward to the central portion of South Dakota. The stand of Western yellow pine in the Pacific coast states is estimated to be between 150 and 200 billion board feet. The average stand per acre varies from 5,000 to as high as 40,000 board feet per acre. Mature trees range in height from 75 to 200 feet and in diameter from 16 inches to five or six feet, depending upon the quality of the sites where they grow. Western yellow pine stands can be made to produce a greater volume per acre than they now yield, foresters think. Investigations show, they state, that typical stands at about 140 years of age should have a volume of about 35,000 to 40,000 board feet per acre, as compared to a present volume of from 10,000 to 20,000 feet. Volumes of from 60,000 to 65,000 feet are attainable on the best sites, foresters believe.

Engelmann spruce occurs in the higher elevations of

(Continued on page 122)

*From data compiled by the West Coast Lumber Trade Extension Bureau.

Pacific Coast Timber Resources

These tables of forestry figures for the Pacific Coast states have been compiled with the co-operation of many individuals and organizations and are believed to be as completely authentic as any data available. The figures are from tables compiled by Mr. E. T. Allen, Forester, Western Forestry and Conservation Association, with co-operation of and reference to the following agencies:

California Forest Protective Association; California White and Sugar Pine Manufacturers Association; California Redwood Association; California State Board of Forestry; California District, U. S. Forest Service; the State Forester, Oregon; U. S. Forest Service (District 6); Oregon Forest Fire Association; Western Forestry and Conservation Association; West Coast Lumbermen's Association; Washington State Supervisor of Forestry; Washington Commissioner of Public Lands; Dean of Forestry, University of Washington; James D. Lacey & Company; Washington Forest Fire Association; U. S. Forest Service (District 1); Idaho State Board of Forestry; North Idaho Forestry Association; South Idaho Timber Protective Association; Forest School, University of Idaho; Montana Lumber Manufacturers' Association; Northern Montana Forestry Association; Blackfoot Forest Protective Association; Montana State Department of Forestry, and Forest School, University of Montana.

SUMMARY, PACIFIC COAST STATES

Present Virgin Timber Stand

M Feet, B.M.

	Federal	State	Private	Total
California	96,500,000	250,000	187,700,000	284,450,000
Oregon	187,100,000	600,000	208,100,000	395,800,000
Washington	86,250,000	22,700,000	173,300,000	282,250,000
Idaho	49,400,000	7,200,000	24,700,000	81,300,000
Montana	34,530,000	2,110,000	13,370,000	50,010,000
Total	453,780,000	32,860,000	607,170,000	1,093,810,000
Percentage	42%	3%	55%	100%

CALIFORNIA

Present Timber Stand

M Feet, B.M.—Pine Region.

	Private	State	Federal	Total
Western yellow pine—(California white)	46,000,000	75,000	31,100,000	77,176,000
Sugar pine	20,200,000	25,000	11,700,000	31,928,000
Douglas fir	16,900,000	40,000	16,500,000	33,439,000
White fir	18,100,000	30,000	14,500,000	32,634,000
California red fir	4,700,000	30,000	12,900,000	17,628,000
Incense cedar	4,200,000	10,000	4,400,000	8,609,000
Miscellaneous	1,500,000	15,000	5,400,000	6,916,000
Total	111,600,000	225,000	96,500,000	208,325,000
Cordwood			13,200,000	13,200,000
National parks			16,000,000	16,000,000

Rate of Cutting

	Acres in Year		M Feet B.M. in year		Pct. of total stand as of 1900	
	Pine	Redwd.	Pine	Redwd.	Pine	Redwd.
1900	20,000	6,700	400,000	400,000	0.2 %	0.52%
1910	30,000	8,300	600,000	500,000	0.3 %	0.66%
1920	45,000	10,300	900,000	620,000	0.44%	0.81%
1922	52,000	11,300	1,037,000	680,000	0.51%	0.9 %
1923	78,100	9,300	1,561,300	556,800	0.77%	0.74%
1924	71,800	9,400	1,436,000	560,500	0.71%	0.75%
1925	96,500	8,300	1,931,000	490,000	0.96%	0.65%

OREGON

Present Timber Stand

M Feet, B.M.—Commercial Species

	Private	State	Federal	Total
Western yellow pine	34,100,000	100,000	41,400,000	75,500,000
Douglas fir	137,500,000	400,000	107,900,000	245,800,000
Others	36,500,000	100,000	37,800,000	74,500,000
Total	208,100,000	600,000	187,100,000	395,800,000

Rate of Cutting

Year	Acres in year	Pct. of total merchantable acreage	Thousand Feet B.M. in year	Pct. of total stand as of 1900
1899	11,400	.06%	400,000	.01%
1910	54,300	.29%	1,900,000	.48%
1920	94,300	.49%	3,300,000	.83%
1922	100,000	.51%	3,500,000	.88%
1923	113,000	.57%	3,966,100	.99%
1924	104,700	.53%	3,665,500	.92%
1925	120,400	.59%	4,216,400	1.10%

WASHINGTON

Present Timber Stand

M Feet, B.M.

Commercial Species	Private	State	Federal	Total
Western yellow pine	5,400,000	1,000,000	7,200,000	13,600,000
Douglas fir	95,800,000	12,500,000	27,500,000	135,800,000
Others	72,100,000	9,200,000	51,250,000	132,850,000
Total	173,300,000	22,700,000	86,250,000	282,250,000

Rate of Cutting

Year	Acres in year	Percentage of total merchantable acreage	M Feet B.M. in year	Percentage total stand (as of 1900)
1899	36,800	.30%	1,400,000	.49%
1910	105,300	.85%	4,000,000	1.42%
1920	148,900	1.20%	5,660,000	2.0 %
1922	171,000	1.38%	6,500,000	2.30%
1923	175,400	1.41%	6,667,700	2.36%
1924	164,900	1.33%	6,267,300	2.34%
1925	190,100	1.53%	7,270,300	2.70%

MONTANA

Present Timber Stand

M Feet, B.M.

	Private	Federal	State	Total
White pine	140,000	1,290,000	50,000	1,480,000
Yellow pine	4,550,000	5,100,000	550,000	10,200,000
Douglas fir and larch	7,000,000	11,920,000	1,090,000	20,010,000
Other	1,680,000	16,220,000	420,000	18,320,000
Total	13,370,000	34,530,000	2,110,000	50,010,000

Rate of Cutting

	Rate of cutting Ft., B.M.	Pct. of total as of 1900
1900	255,685,000	.....
1910	319,089,000	.....
1920	410,000,000	.....
1922	275,000,000	.....
1923	426,900,000	0.79%
1924	350,300,000	0.65%
1925	388,900,000	0.72%

Including round products, the average annual cut is around 400,000,000.

IDAHO

Present Timber Stand

Standing timber over 12 inches D.B.H. (in thousands of board feet)

	Private	Federal	State	Total
White pine	7,300,000	4,000,000	2,300,000	13,500,000
Yellow pine	4,700,000	10,800,000	1,000,000	16,500,000
Fir and larch	6,800,000	14,300,000	1,900,000	23,000,000
Other	5,900,000	20,300,000	2,000,000	28,200,000
Total	24,700,000	49,400,000	7,200,000	81,300,000

Rate of Cutting

	M. Ft. B.M.	Pct. of total stand as of 1900
1899	65,300	.....
1910	746,000	.....
1920	970,000	.....
1922	850,000	.80%
1923	1,074,000	1.00%
1924	1,019,100	0.94%
1925	1,140,600	1.05%

Alaska Lumber Production

Alaska's lumber production for 1926 reached a total of over 53 million board feet, of which spruce accounted for nearly 80 per cent of the total. All but 1,653,040 feet of spruce were cut by mills located on national forest land, according to Chas. H. Flory, district forester of Alaska.

The following table shows the timber cut under commercial sales on the national forest of Alaska by calendar years 1909-1926:

	Tongass		Chugach	
Year	M. ft. B. M.	Value	M. ft. B. M.	Value
1909	6,171.81	$ 5,594.07	2,099.54	$ 1,113.69
1910	12,366.07	12,926.50	6,450.45	7,631.31
1911	30,192.86	32,072.34	1,924.16	1,889.12
1912	42,279.53	50,088.67	1,933.88	1,932.89
1913	32,893.41	41,993.92	3,650.18	5,077.59
1914	39,620.05	48,478.58	1,270.36	1,838.19
1915	28,681.18	36,987.07	1,546.53	2,024.09
1916	42,282.73	56,410.13	4,306.51	5,654.95
1917	41,002.32	58,791.31	6,338.38	7,294.22
1918	43,114.33	87,444.23	5,535.98	7,551.56
1919	37,373.66	78,710.76	5,079.42	8,682.67
1920	45,609.14	78,987.12	4,833.05	8,039.48
1921	11,650.58	18,780.91	2,665.18	4,371.39
1922	20,622.84	36,986.20	3,319.90	4,414.29
1923	40,463.19	68,611.45	4,381.98	7,179.61
1924	48,645.81	85,782.39	3,893.44	6,009.71
1925	53,723.41	93,233.11	3,801.51	6,473.27
1926	50,991.67	82,914.18	4,769.18	7,335.27
Total	627,684.59	$974,792.94	67,799.63	$94,423.30

Rayon Pulp and Alpha Pulp

By H. LUNDBERG
Pacific Coast Representative, G. D. Jenssen Co.

H. LUNDBERG

THE name "Rayon Pulp" is at present mentioned frequently in connection with new projected mills on the Pacific Coast and the following short article is an endeavor to clarify the meaning of "Rayon Pulp and Alpha Pulp."

Rayon is a trade name for artificial silk manufactured according to the viscose method. Rayon pulp is consequently a pulp which is suitable for the manufacture of such a material.

The viscose reaction was discovered by Cross and Bevan and their discovery published in 1893. Briefly, they had found, that cellulose when impregnated with a mercerizing solution of caustic soda and carbon bisulphide then added, combined to form a water soluble sodium salt of cellulose called viscose, which could be readily decomposed with the formation of a gelatinized cellulose. This regenerated cellulose is known today by the name of "viscose" and spun as "Rayon."

Up to a few years ago cotton and cotton linters were extensively used in the preparation of viscose. This material has, however, gradually been replaced by the cheaper and more plentiful bleached spruce sulphite pulp, so that at the present time only about five per cent of the raw material used in the commercial manufacture of rayon consists of linters.

To produce a satisfactory spinning solution and final product the pulp has to fulfill certain requirements.

First of all it must be pure; that is, free from lignin and coloring matter and have as high an Alpha-cellulose content as possible.

With Alpha-cellulose we understand that part of the pulp which does not dissolve in alkali retains its form as fibre.

Further, the pulp must also be able to absorb readily large quantities of caustic soda solution.

The analysis of a good rayon pulp should give results falling within the following limits:

Ash—.3 to .4%.
Lignin—Negligible traces.
Coppernumber—Not above 4%.
Alpha Cellulose—85 to 90%.
Barytanumber—83 to 88%.
Pentosans—4 to 5% (Not of great importance).
Caustic Soda Absorption—Not below 700%.
Viscosity—52-55 seconds.

Alpha vs. Rayon Pulp

The viscosity may be still higher, but a too low as well as a too high viscosity is detrimental in the manufacture of viscose.

The suitability of a viscose solution for the preparation of rayon can be determined by forcing a fine stream of the solution into 40 per cent acetic acid. If properly matured, coagulation takes place at once; otherwise the viscose passes into solution.

From what is said above we understand that a rayon pulp should not be confused with the Alpha pulp that has been put on the market during the last years. The two pulps are distinctly separate raw materials. The Alpha pulp is a purified pulp and can be produced by several different methods, which all give a much higher Alpha cellulose content (94 per cent and above), and render the pulp more or less inactive towards Fehlings solution.

One method, according to Schwalbe and Becker, is to boil the pulp with a one per cent milk of lime solution. Opfermann purifies pulp by boiling it three to six hours at two to three atmospheric pressures with a .5 to 2 per cent solution of sodium carbonate. The addition of a small amount of alkali hydroxide or sulphide increases the softness and absorbency of the product.

Close and Uniform Control

A third method is to digest mildly bleached spruce sulphite pulp five hours at 80 lbs. pressure with a two per cent sodium hydroxide solution.

An Alpha pulp produced by any of the many patented methods is, of course, a wonderful pulp and it has found a ready market, replacing rags in the manufacture of fine paper, but not as easily as a raw material for rayon. A rayon pulp is a pulp produced direct without further purification.

The question is then, "How is a pulp suitable for the manufacture of rayon produced?"

There is only one answer to this question: Through uniformity and a very close chemical control straight

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through the whole sulphite pulp manufacturing process. We cannot mix different woods, neither wet and dry nor seasoned and green, and expect to get a uniform product. We must watch every step in the cooking operation, washing, bleaching and drying. One neglected detail, considered of no consequence, might throw us off.

The pulp might seem uniform as to color, cleanliness and strength, but is it uniform from a chemical point of view?

Mr. T. Bentzen has made quite a study of the chemical composition of average commercial bleached pulp, and he has found a very wide variation not only in pulp from different mills, but that different shipments of the same grade of sulphite pulp from the very same mill give variable results.

Chlorine Free

Mr. R. N. Miller and Mr. W. H. Swanson have extensively treated the subject of cooking in their various papers on sulphite pulp, based on their findings at the Forest Products Laboratory. They have clearly shown what influence relatively small changes in the cooking operation have on the final product, and how easy the cellulose in the pulp can be decomposed in the digester if the operation is handled incorrectly. Not only in the cooking operation, however, can the cellulose be decomposed, but also in the bleaching and following operations.

Mr. Bentzen, in one of his papers about evalution of pulp, brought out a point that may not have been given enough consideration. That is the decomposing of cellulose during the drying operation if chlorine is present in the pulp. He mentions one case when the pulp was considered "pretty nearly chlorine free;" there was a loss of eight and one-half per cent of the Alpha cellulose content in the pulp from the wet end to the dry end. It is easy to understand that a pulp containing much free chlorine will suffer an enormous loss of the Alpha content. Therefore, the pulp should be washed until even traces of chlorine are removed.

On the whole, it is within the scope of almost every sulphite mill to make a pulp suitable for the manufacture of rayon silk, but one thing is absolutely needed, and that is a thorough understanding of the importance of uniformity and a close cooperation of the sulphite superintendent and the mill chemist.

What They Think About 1927

(Continued from page 102)

on a percentage which compares favorably with increases in pulp production."

Others believe that the development of new pulp producing regions in America for both pulp and paper will result in extremely keen competition for quite some time with attendant narrow margins of profit. As one man remarked: "It is not a picture that would delight those engaged in the manufacture of paper and pulp."

A significant note is sounded in practically all of the comments offered in response to the question on the 1927 trend. While all express the need of cautious procedure in further increasing production capacities of both pulp and paper, they at the same time make it clear that they do not wish to be classed as alarmists.

At least one manufacturer expresses a fear that development of the pulp and paper industry on the Pacific Coast has had a very serious effect on business in the East. He states further that this development has become a serious menace to those who are not protected by adequate reserves of material and a well established trade.

Some comments are purely pessimistic. "You have undoubtedly noticed two recent drops of considerable proportions in kraft paper prices," one wrapping paper manufacturer states. "The outlook for the pulp and paper industry at the present time is not at all promising, and I might admit that I am frankly pessimistic with regard to the future."

The World War receives its share of blame for poor business conditions. It is pointed out by some manufacturers that the slowness with which Europe is recovering is having a depressing effect on the market.

"So far as we are concerned," we hear from one sulphite pulp mill, "the market has not materially changed from that of 1926. Prices have been reduced largely because Scandinavian pulp is being offered through American agents at very low figures. The market has been decidedly a buyers' market and the paper manufacturers have allowed their stocks of pulp to fall very low, thereby hoping to take advantage of the dropping pulp prices. This attitude has in turn kept pulp prices dropping until they are unreasonable.

"Pulp producers and paper manufacturers as well are apparently watching Europe with great interest for they believe that with prevailing conditions there is an element of danger for the American paper manufacturer. Any firm stand on the part of the pulp manufacturer for better pulp prices will turn the present buyers' market into a very decided sellers' market. The unsatisfactory conditions in Europe are causing the turmoil in the pulp market and any turn for the better across the Atlantic will decidedly relieve the situation in America."

U. S. Production Estimates for 1927

The reports as received by the American Paper and Pulp Association for practically all grades of paper and wood pulp during the year indicate that 1927 was a year of decreased production for both paper and wood pulp. The estimates, based on data received up to the end of the year, show a decline of total U. S. paper production of 3 per cent and of 6.5 per cent for U. S. total wood pulp production.

Estimated U. S. Paper Production—1927

	1927	% Change from 1926	1926
Newsprint	1,500,000	—11.0	1,686,000
Book	1,376,000	— 3.0	1,411,000*
Board	3,577,000	— 2.0	3,650,000*
Wrapping	1,520,000	+ 5.0	1,450,000*
Writing	515,000	+ 3.0	500,000*
Tissue	310,000	+ 3.3	300,000*
Hanging	118,000	+ 7.0	110,000*
Cover	26,000	+ 7.0	24,285
Felts and Building	582,000	— 3.0	600,000*
Absorbent	70,000	+ 7.0	65,600
All Other	124,000	+39.0	203,115
Total	9,718,000	— 2.9	10,000,000

*Approximate—no census made in 1926.

Estimated U. S. Wood Pulp Production—1927

	1927	% Change from 1926	1926
Mechanical	1,560,000	—13.0	1,774,000
Soda	482,000	— 3.0	497,000
Sulphate	575,000	a +10.0	523,000
Sulphite	1,545,000	— 3.0	1,599,000
Total	4,117,000	— 6.5	4,395,000

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WE PROVIDE CAPITAL FOR BUSINESS EXPANSION

Insuring Our Future Wood Supply

By THORNTON T. MUNGER
Director, Pacific Northwest Forest Experiment Station

IT has been the experience in the East that the pulp and paper people were among the first to look upon wood as a crop which had to be cared for and renewed to provide for a continuous future supply. It looks as though the same situation were going to prevail in the West. Naturally the great investment that a paper mill involves necessitates assurance of a perpetual and adequate supply of the basic resource. In the competitive grab for timberlands no mill can expect to acquire and hold enough virgin timber to last it 100 or more years—unless it reached out to impracticable distances, and obligated itself with terrific annual carrying charges.

The only other course, therefore, if a mill is to be a continuing enterprise with minimum annual amortization charges is to have every acre of its forest property busy growing trees to supply the mill after the tract has been cut over once. Thus there may be a continuous cycle of cutting, every acre yielding a crop every few decades, pulp wood farming, so to speak. A paper plant can have the assurance of a perpetual supply of its raw product merely by tree farming as much forest acreage as is capable of growing yearly the equivalent of its annual needs. On the good soils of the spruce-hemlock belt, for example, 40,000 or 50,000 acres could probably be made to supply a 200-ton mechanical mill forever.

Studying natural reforestation on logged off land. Here the seed disseminated by the standing timber at various distances is being caught on screens and counted. Watching the germination and struggle for existence of seedlings on this and similar areas is revealing Nature's secrets of tree reproduction.

There is considerable technique in getting the most out of forest soils, just as there is in making the most of farm soils. There is science required in protecting forests from fire, disease, insects, and their other enemies, there is an art in getting logged-off land to seed itself in the cheapest way, in giving the trees just the ideal density of stocking to receive optimum growth. The function of the federal Forest Experiment Station is to make investigations from which may be developed better methods of protecting and managing forests for continuous production.

In its program of research projects the needs of the pulp and paper industry for information on pulp wood growing have been foreseen, and some of the investigations of the past year have this use in view. The industry is at present represented on the Advisory Council of the Pacific Northwest Forest Experiment Station through appointment by the secretary of agriculture in the person of B. T. McBain, of Portland, in order that the needs of the paper mills as well as those of the lumber mills may be known in framing a forest research program for the region.

Current Studies

Some of the current studies that will help foresters and operators in the conservative management of pulp lands may be very briefly cited here.

A study of the rate of growth of immature stands of Douglas fir has been under way for the last four years and it is now possible to say with some assurance how much natural Douglas fir stands will yield at various ages and on all types of soil. It is found that yields of better than 1,000 board feet per acre per year, or as much as 75,000 feet (full scale, Scribner rule and close utilization assumed) in 75 years are not unusual. Though fir is of less interest to the paper man than to the lumberman it is hoped to make similar growth studies of spruce and hemlock as soon as possible, for the basic question of anyone contemplating industrial forestry is—"How long will it take to grow pulp wood and what will the yield per acre be?"

The density with which trees stand is closely tied up with their rate of growth. If they are too crowded they are undernourished and stagnate; if they are too scattered they go to limbs and not to height. There is a point of ideal stocking; this the experiment station is trying to determine. One way is to make a thinning or selective cutting so as to bring about the ideal density for the trees that are left. Because the pulp industry can use small and young timber it seems probable that quite a bit of the pulp supply of the future will come from thinnings—which will both accelerate the growth on the reserved trees and utilize merchantable young ones which would otherwise die from over-crowding.

Slash disposal is one of the problems of the West Coast operator, especially in the spruce-hemlock forests of the fog belt. As Frank H. Lamb has said, "To burn

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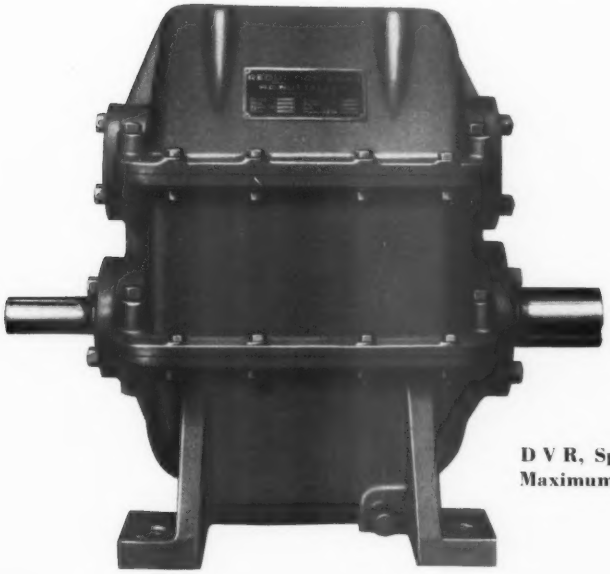

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Nuttall

Measuring the trees on sample acres to determine the rate of growth of Douglas fir forests. This 69-year-old stand contains 10,316 cubic feet of wood, or 74,260 board feet (gross scale by International rule) to each acre.

or not to burn, that is the question." A systematic study has been undertaken to get the facts as to the merits and disadvanages of each system for each type of forest, and a number of detailed plots were established in 1927.

If logged-off land is to be reforested by natural reseeding from seed trees or adjoining green timber it is important for the forester to know about seed dissemination and the other reproductive characteristics of his trees. Notable additions to the knowledge of western trees have been made this year. One fact is the distance that winged fir, hemlock, and pine seed can fly in winds of various velocities—the result of some tests of dropping seed from a kite over a snow-covered field.

The artificial growing of embryo trees in a nursery and planting them on logged-off land, as the largest paper company in the Northwest is now doing on an extensive scale, always involves many nice questions of technique, and many experiments along this line are under way at the Government's Wind River nursery. Among the species under study are noble and silver fir —two of the balsam firs that are sure to be the great pulp woods for the upper slopes on the Cascades.

Alaskan Reforestation

Alaska is not only a great reservoir for mature and over-mature pulp wood, but it has immense possibilities for supplying paper mills perpetually. On the eve of the commencement of extensive pulpwood logging there the Forest Service is interested in developing the best methods of cutting to secure reforestation of the pulp woods and in getting the best inventory and estimate of the productive capacity of this great federal forest property. With this in view the author spent five weeks in Southeastern Alaska the past season to assist the District Forester there in planning a program of forest research. Besides growth and yield studies the local foresters are much interested in possible ways of increasing the proportion of spruce over hemlock and in ways of logging extensive areas of pulp timber in that rugged country that will promote natural reseeding.

The above are but a few of the ways in which forest research can blaze the way for pulp wood timber farming in the West.

Alaska Power Permits Explained

Power permits granted to the Zellerbach interests, and George Cameron, of San Francisco, in connection with pulp timber purchases are explained by O. C. Merrill, executive secretary of the Federal Power Commission, as follows:

"The preliminary permits issued to the Zellerbach interests and to George Cameron, San Francisco, do not authorize any construction to be undertaken with reference to the hydroelectric projects contemplated by them in the Tongass National Forest, in Alaska. The permits merely preserve the priority of the applicants while they are conducting investigations, surveys, and securing data to enable them to submit applications for licenses. A license, if issued, authorizes construction and prescribes the time of commencement and completion thereof.

"The Forest Service and the Federal Power Commission, in order to insure the development and utilization of water power and timber resources of the Tongass National Forest in Alaska, have agreed upon cooperative action in the matter of timber award and issuance of preliminary permit. To that end the following condition was incorporated in both permits:

Must Execute Contract

"If the conditional award heretofore made to the applicant by the United States Forest Service for pulp timber allocated to the water-power sites covered by the application is not accepted, is surrendered, or is canceled, the preliminary permit shall also be subject to cancellation by the Commission; and if a license is issued for the proposed project prior to the execution and approvel of the final contract with the licensee for said timber, such license shall not become effective unless final contract shall have been executed and approved within a period to be specified in the license.

"In addition the permit to the Zellerbachs contained the following self-explanatory condition:

"License, if issued, may contain a special condition that authorization to develop water power on Mahoney Creek shall be subject for a period of ten years from date of issuance thereof to a prior right to utilize the waters of said creek for power development or domestic supply for public-utility purposes at Ketchikan.

"The priority of both permits expires June 30, 1929, unless application for license is received in the meantime, or the period of the permit is extended.

Heavy Chemicals Used in the Paper Industry

According to the estimate made by Chemical and Metallurgical Engineering in its Chemical Number, September, 1927, the yearly consumption of heavy chemicals by the paper industry is as follows:

	Short Tons.
Sulphuric acid	500
Salt (NaCl)	260,000
Alum ($Al_2(SO_4)_3$)	100,000
Liquid chlorine	32,500
Soda ash	75,000
Caustic soda	9,000
Silicate of Soda, 40 degrees Be.	10,000
Salt cake	103,000
Lime	330,000

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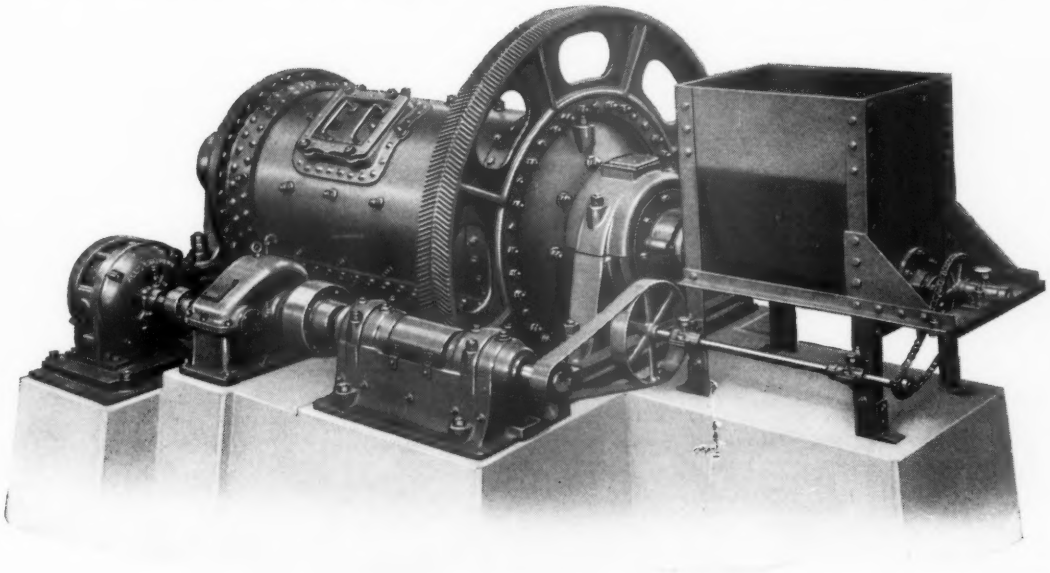

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West Coast Wood Costs Are Low

Figures released by the U. S. Department of Commerce showing pulp wood consumption and costs for 1926 reveal the low cost of wood in the Pacific Coast states and indicate the rising costs of wood in the East and Middle West where longer operation of pulp and paper mills has hastened the depletion of the forests.

Table No. 1 shows how the amount of wood consumed annually has grown during the present century.

Table No. 2 sheds light on the dependency of the United States on outside sources for vast quantities of pulp wood.

Table No. 3 is of particular interest to the Pacific Coast states as it shows that the Pacific Coast is greatly favored with cheap wood, indicating the ability of the West to take a strong hand in pulp production.

TABLE 1.—QUANTITY AND COST OF PULPWOOD CONSUMED, FOR THE UNITED STATES, FOR SPECIFIED YEARS: 1899 TO 1926

Year	Quantity (Cords)	Total	Average per cord
1926	6,766,007	$101,229,402	$14.96
1925	6,093,821	94,339,540	15.48
1924	5,768,082	92,671,688	16.07
1923	5,872,870	95,306,283	16.23
1922	5,548,842	89,895,191	16.20
1921	4,557,179	91,589,103	20.10
1920	6,114,072	116,495,720	19.03
1919	5,477,832	87,386,083	15.95
1918	5,250,794	73,167,118	13.93
1917	5,480,075	60,815,057	11.10
1916	5,228,558	45,785,682	8.76
1914	4,470,763	39,408,453	8.81
1911	4,328,052		
1910	4,094,306		
1909	4,001,607	34,477,540	8.62
1908	3,346,953	28,047,473	8.38
1907	3,962,660	32,360,276	8.17
1906	3,661,176	26,411,887	7.21
1905	3,192,123	17,735,665	5.56
1899	1,986,310	9,837,516	4.95

Not including slabs and other mill waste in Louisiana, Massachusetts, North Carolina and Virginia.

Forests Are Basis of Great Industry

Figures made public recently indicate the tremendous part which the forests play in industry of the West. In the eleven Western States there are 2,214 sawmills, 2,096 planing mills and woodworking plants, 1,531 logging camps, 370 shingle mills, 70 pulp and paper mills, 38 veneer plants, 655 wholesale lumber dealers, 41 door manufacturers, 27 frame and sash manufacturers, 13 garage door manufacturers, 25 cross arm manufacturers, 18 handle manufacturers, 45 cooperage plants, 221 furniture factories, 55 wood preserving plants, 617 machine shops, 251 company general stores, 346 company hotels, sawmill towns; 529 camp commissaries and 468 camp mess or boarding houses in camps.

Federal Funds For Road Building

The total Forest Highway fund authorized for the fiscal year ending June 30, 1928, amounts to $4,500,000, and is apportioned for highways in or adjacent to national forests in fourteen western states and Alaska.

Oregon receives $533,000, Washington $415,000, Idaho $462,500, California $575,000, Montana $361,000 and Alaska $361,500 under the program as approved by the Secretary of Agriculture and just announced by the District Forester, Portland, Oregon.

More Wood Burned Than Used

A greater quantity of wood, used as fuel, goes up in smoke each year than goes into our dwellings and other buildings, the fact is borne out by statistics of the United States department of agriculture, which show that 9,500,000,000 cubic feet of wood is removed from the forest annually for fuel and 8,256,000,00 for lumber.

TABLE 2.—PULPWOOD CONSUMPTION, BY KINDS OF WOOD AND PROCESSES OF MANUFACTURE, FOR THE UNITED STATES: 1926

Kind of Wood	Total (cords)	PROCESS OF MANUFACTURE (CORDS) Mechanical	Sulphite	Soda	Sulphate
Total	6,766,007	1,725,653	3,143,811	900,800	995,743
Spruce:					
Domestic	2,415,870	1,074,462	1,293,664		47,744
Imported	1,013,155	396,884	557,747	40,180	18,344
Hemlock:					
Domestic	1,064,661	92,953	858,808		112,900
Imported	10,702	6,834	3,868		
Yellow Pine	684,816	8,024	21,929	104,197	550,666
Poplar:					
Domestic	212,178	12,442	7,734	187,197	4,805
Imported	210,133	9	711	209,413	
Balsam Fir:					
Domestic	254,614	66,987	134,683		52,944
Imported	42,500	23,212	19,288		
Jack Pine	137,494	11,026			126,468
Yellow Poplar	134,747	450		134,297	
Tamarack or larch	94,695		18,367		76,328
White Fir	76,421	23,009	53,412		
Gum	49,801	102		49,699	
All other*	183,553	2,651	7,081	173,617	204
Slabs and other mill waste	180,667	6,608	166,519	2,200	5,340

*Basswood, beech, birch, buckeye, cedar, chestnut, cottonwood, Douglas fir, maple, white pine and willow.

TABLE 3.—PULPWOOD CONSUMPTION—QUANTITY AND AVERAGE COST PER CORD, BY CONDITION IN WHICH PURCHASED, BY STATES: 1926

State	TOTAL Quantity (Cords)	TOTAL Average cost per cord (f.o.b. mill)	ROUGH Quantity (Cords)	ROUGH Average cost per cord (f.o.b. mill)	PEELED Quantity (Cords)	PEELED Average cost per cord (f.o.b. mill)	ROSSED Quantity (Cords)	ROSSED Average cost per cord (f.o.b. mill)
United States	6,766,007	$14.96	2,970,015	$12.32	3,572,916	$16.82	223,076	$20.30
Main	1,298,357	17.42	204,328	16.56	1,033,379	17.27	60,650	22.83
Wisconsin	1,224,443	12.83	1,120,363	12.62	58,297	13.25	45,153	17.56
New York	990,701	19.53	47,445	18.70	896,007	19.35	47,249	23.80
New Hampshire	431,138	20.80	92,771	19.87	334,987	21.05	3,380	21.95
Pennsylvania	425,684	16.85	87,800	19.50	336,055	16.15	1,829	18.00
Michigan	331,570	15.49	245,786	15.68	82,911	14.73	2,873	21.16
Virginia	317,058	12.72	106,875	8.17	209,333	15.01	850	20.37
Washington	305,787	9.08	221,265	8.53	84,522	10.51		
Minnesota	288,390	11.34	260,619	11.12	27,771	13.43		
Louisiana	258,439	6.48	238,439	6.31	20,000	8.50		
Massachusetts	54,510	22.36	9,231	19.05	36,259	20.14	9,020	34.67
Vermont	48,554	19.31	35,230	18.16	13,324	22.34		
California and Oregon	232,989	11.40	158,794	10.91	22,123	8.78	52,072	14.00
All other states*	558,387	10.22	141,069	7.54	417,318	11.13		

* Delaware, District of Columbia, Georgia, Maryland, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, Texas and West Virginia.

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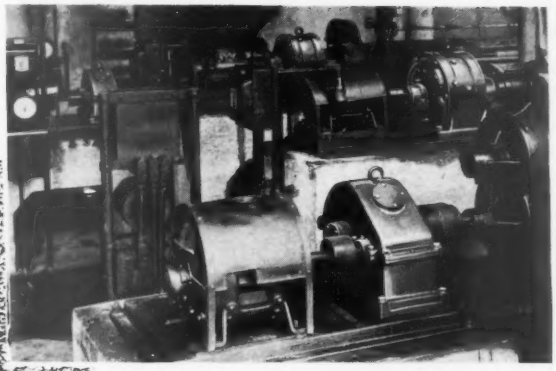
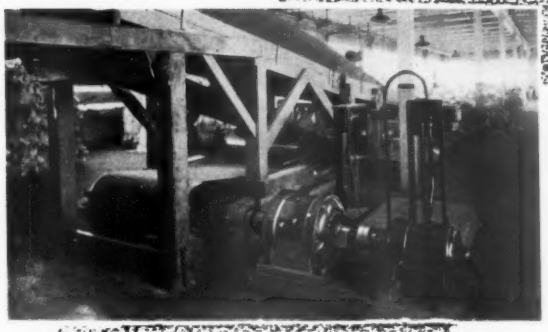
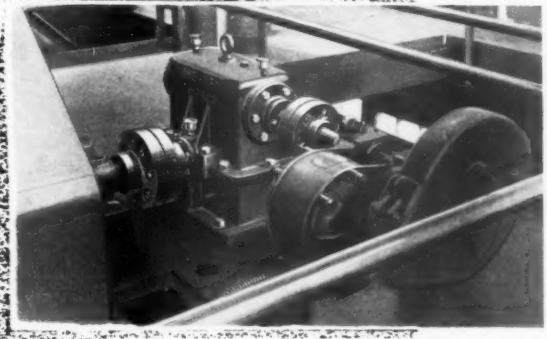


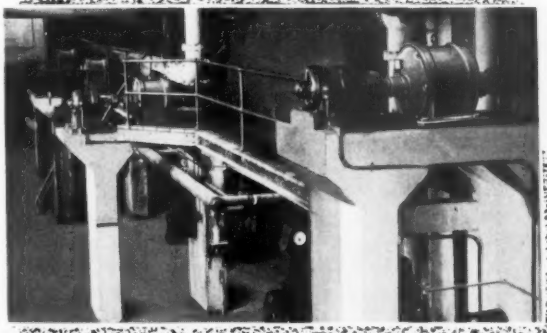
D. O. James Herringbone and Planetary Speed Reducers on Conversion Save-all Drives.



A 10 H.P.-96 to 1 Ratio James Planetary Speed Reducer, driving a paper and rag sorting conveyor.



A Chip Conveyor drive in an Eastern pulp mill uses a James Heavy Duty Worm Gear Speed Reducer



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High Lights in B. C. Pulp History

Canada's Pacific Coast Province Today Has Many Millions Invested in Pulp and Paper

IT is now more than thirty years since a group of far-seeing Dutchmen established the first pulp mill on Vancouver Island—the forerunner of an industry that is now worth more than $20,000,000 to British Columbia annually. The Dutchmen's venture was short-lived and soon collapsed, for in those days the market

A. E. McMASTER
General Manager, Powell River Co., Ltd.
The Powell River Mill is the Pacific Coast's Largest Mill

for pulp on the Pacific Coast was extremely limited. But perhaps they foresaw a faint picture of the developments of today, for they must have realized even in those early days the rich future awaiting exploitation of the province's vast pulpwood forests. Capital invested in the industry now totals $42,779,000.

For a good many years the big producers in British Columbia have been the Powell River Co. and Pacific Mills, Ltd. The Ocean Falls Co. was the predecessor of Pacific Mills. It was incorporated largely with British capital in 1909 to acquire timber properties of more than 80,000 acres, together with waterpower. Additional timber areas have been acquired from time to time since then, totaling 2,000,000,000 feet. In 1910, £300,000 of 6 per cent first mortgage bonds were issued in London, but in April, 1913, the concern encountered financial reverses and a receiver was appointed. In 1915 the Crown Willamette Paper Co. became the controlling interest through purchase.

The Powell River Co. and the Pacific Mills both started to operate about the same time, during the war years, and both of them had to overcome the difficulties invariably to be encountered by a pioneering industry obliged to set its own precedents. The Powell River company's early history was somewhat strewn with obstacles of one kind or another. Its mills are today the largest in the province.

Real Start Began in 1909

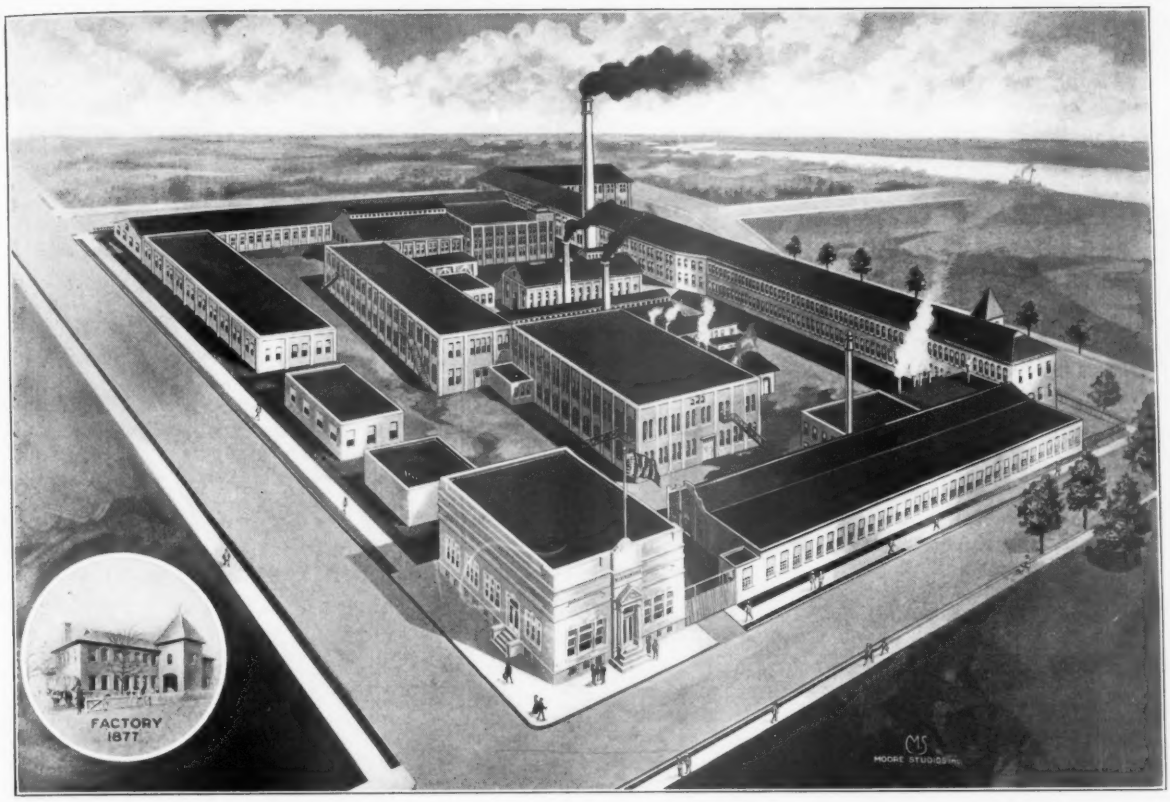
The history of the pulp and paper industry in British Columbia as it is known today began about the year 1909, for it was then that capitalists first became active in several of the enterprises which today rank among the most successful on the Coast. Both the Powell River Co. and the Pacific Mills had their genesis about that time and so did the predecessors of that other big British Columbia producer, British Columbia Pulp & Paper Co., Ltd.

The British Columbia Sulphite Fibre Co. was launched in 1909. A mill was erected on Mill Creek on Howe Sound, about 30 miles north of Vancouver, with an initial capacity of about 30 tons of sulphite fibre daily. That was British Columbia's real start. Today, the largest British Columbia company has facilities enabling it to produce more than 450 tons in a single day.

The Empire Pulp & Paper Mills, Ltd., started operations in 1916 with a capacity of 50 tons of pulp daily. The mill was located at Swanson Bay. The Colonial Pulp Mill was established soon afterwards at Port Alice, northern Vancouver Island, with a daily capacity of 100 tons. These three concerns were amalgamated into one organization under the name of Whalen Pulp & Paper Mills, Ltd., with a capital of more than $10,000,000, James Whalen and his brothers, of Fort William, being the initiators of the enterprise.

Recent Expansion

Some of the developments of the recent past that indicate the general expansion going on may be summarized as follows: Doubling of the productive capacity of the Powell River Pulp & Paper Co.'s plant at Powell River; reorganization of the Pacific Mills, Ltd., making it a subsidiary of the Crown Willamette Paper Co. in California, Oregon and Washington; reorganization of the Whalen Pulp & Paper Mills as the British Columbia Pulp & Paper Co., Ltd.; reorganization of the Beaver Cove Lumber & Pulp Co. into the Canadian Forest Products, Ltd., with the assuarnce of almost unlimited financial backing from the International Harvester interests; active negotiations between Eastern Canadian capitalists and the provincial government for the establishment of a $30,000,000 pulp and paper mill near Prince George; the sale of 2,000,000,000 feet of pulpwood timber on Queen Charlotte Islands to the Powell River Co. by the provincial government, thus opening up a vast territory for pulp development; sale of the idle mill of the Howe Sound Pulp & Paper Co., at Port Mellon, to the Leadbetter interests in the United States with the subsequent reorganization of the company into the Vancouver Kraft Mills, Ltd., and project-



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ed remodeling of the mill to provide for waterpower and increased capacity.

A sense of security is now present in the pulp and paper industry that was previously absent and this is largely due to the influx of new capital provided by men who have faith in the industry. Ever since the post war period disrupted the world's trade channels the Whalen Pulp & Paper Mills stumbled along with indifferent success and several attempts at reorganization were made without bringing about the desired result of making it financially capable of steady advancement as a producer. Not much more than a year ago the assets of the company were acquired by the first mortgage bondholders and turned over to the new concern known as the British Columbia Pulp & Paper, Ltd. The bondholders acted through the Montreal Trust Co. and bought the assets and undertakings for $4,000,000. Under the reorganization plan it was made possible for them to retain an interest in the property by purchasing further securities in the new company. The new first mortgage bonds were issued in exchange for the Whalen first mortgage bonds, par to par. The preferred stock was distributed to the Whalen bondholders on a basis of $150 of preferred stock with each $1,000 bond, representing interest accrued and unpaid up to November, 1925. The Royal Securities Corporation purchased $1,500,000 in 7 per cent general mortgage bonds and gave its undertaking that if at any time up to July 1, 1926, the working capital of the company should fall below $1,000,000 it would purchase additional general mortgage bonds to make good such deficiency. The company was able to start the year free of floating debt and with sufficient capital to permit untrammelled operation.

Further Development in Sight

Reorganization of what was at the time the biggest producer of pulp and paper in British Columbia—the Pacific Mills, Ltd., was one of the outstanding happenings on the Coast in the paper sphere. One of the interesting features of the reorganization lay in the fact that a large amount of stock of the new corporation was made available to the public. The new financing involved a total of $50,000,000. The management remained the same after the financial readjustment, but a large proportion of the new company's securities were offered to the public, and $15,000,000 was offered to stockholders of the old company.

Crown Willamette is now working on an enormous project at Campbell River which will give it one of the largest pulp and paper mills in the world. So far only the preliminary surveys have been made, but it is proposed to spend a total of $50,000,000 on the enterprise and to build a 1,000-ton-a-day mill. Expenditure during the next five years is expected to total about $15,000,000.

Six million dollars was involved in the actual purchase of the Beaver Cove Lumber, Pulp & Paper Co., but it is reported that the International Harvester Co., which bought the concern, is ready to spend up to $16,000,000 more to insure progressive development. The effect of the deal was to transfer the extensive Canadian holdings of the White Brothers Lumber Co. and the Beaver Cove concern to a consolidated and reorganized company known as Canadian Forest Products, Ltd., with International Harvester holding a controlling interest. Before the sale was made six or seven million dollars had been invested in the properties, but the mills were shut down nearly six years ago after they had barely commenced to operate. The war halted the original program at Beaver Cove. Some 20 years ago the White Brothers, of Boyne City, Mich., made the original purchase of about 3,000,000,000 feet of pulpwood in the northeast section of Vancouver Island and this will form the nucleus of the new company's holdings. Extensive surveys are now under way with a view to enlarging the existing plant and establishing a big waterpower system on Nimpkish River. If the Prince George project materializes, it will be one of the largest in Western Canada, involving an outlay of perhaps $30,000,000. Frank P. Jones, Canada cement magnate, is one of the principals and most of the capital is eastern Canadian. It is proposed to harness the Isle de Pierre rapids to provide the needed motive power.

Forestry Resources of the Pacific

(Continued from page 108)

western Canada and the United States. It is found in the Rocky mountains from the northern boundary of British Columbia to southern New Mexico, and in the Cascade range and Blue mountains of Oregon and Washington. The present stand of Engelmann spruce is estimated at about 77 billion board feet of timber, of which about 56 billion board feet is in the province of British Columbia. The annual cut is about one billion feet. The mature trees are usually about 100 feet in height and from 18 to 36 inches in diameter. Pure stands will yield from 5,000 to 15,000 board feet to the acre, although stands of 25,000 to 30,000 feet to the acre are not uncommon. Because of the rather short growing season in the high altitudes where it exists, Engelmann spruce is a rather slow-growing species. Seed crops occur at about three to four-year intervals, and an abundance of seed is usually produced.

Lodgepole pine is widely distributed in the western part of the United States and in western Canada. It is found from the Yukon river southward along the Cascades, Sierra Nevadas and San Jacinto mountains to the northern parts of Lower California; through the main ranges of the Rocky mountains to northern New Mexico; in the intermediate mountain ranges of eastern Washington and eastern Oregon, and eastward into the Black Hills of South Dakota. Usually, lodgepole pine forests have a volume of from 5,000 to 10,000 board feet per acre, although stands yielding 20,000 feet per acre are known. The rate of growth is comparatively slow. On the most suitable sites it attains a diameter of 15 or 18 inches and a height of from 90 to 100 feet in 100 years. Lodgepole pine is a prolific seed producer and reproduces only from seed. A large per cent of the seeds germinate and the seedlings survive under exceedingly harsh climatic soil conditions.

Western Larch

Western larch, sometimes called tamarack, is the giant of the larches. It attains a height up to 200 feet and a diameter between five and six feet. Ordinarily, trees are from about 150 to 180 feet tall and from 2½ to 4½ feet in diameter. The trees are found in southeastern British Columbia, northwestern Montana, northern Idaho, eastern Washington and northeastern Oregon. Its principal commercial range is in eastern Washington, northern Idaho, western Montana and northeastern Oregon. It is sometimes found in pure stands but is usually mixed with other species. Present stands contain from about 5,000 to 20,000 board feet per acre. Foresters believe, however, that fully stocked second-growth stands will contain double or even triple this volume.

There are eight species of balsams, or true firs, in the western part of the United States. Of these the

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noble fir, silver fir, white fir are of commercial importance. The stand of these woods is comparatively limited, being estimated at 82 billion feet.

The total stand of Noble fir has been estimated to be between three and four billion feet. It is found principally along both sides of the Cascade range in Oregon and Washington. Its commercial range is limited to the northern part of Oregon and the southern part of Washington in the Cascade range.

Silver fir occurs principally along the lower west and south slopes of the Olympic mountains, the west slopes of the Cascade range in Washington and the foothills of the lower Columbia river region in Oregon and Washington. In pure stands it will yield an average of from 40,000 to 50,000 board feet per acre. Mature trees are as a rule from two to four feet in diameter and about 150 to 200 feet tall.

White fir, which constitutes the bulk of the true firs in the West, comes from two separate species. It is found in commercial quantities in the Sierra Nevada mountains of California, and in western Washington, western Oregon, in northern Idaho and mixed in with redwood on the north California coast. The white firs are reasonably tolerant trees, prolific seed producers and reproduce heavily in the forest. They may reach great size, attaining diameters of from 5 to 6 feet and a height of 175 feet or more.

TOTAL FOREST LAND AREA IN ACRES

	Private	State	Federal	Total
California	6,782,000	95,000	12,319,000	19,196,000
Oregon	10,884,000	74,000	15,290,000	26,248,000
Washington	9,200,000	1,315,000	9,356,000	19,871,000
Idaho	1,521,000	700,000	20,719,000	22,940,000
Montana	2,787,000	423,000	12,120,000	15,330,000
British Columbia				18,000,000

RATE OF TIMBER GROWTH UNDER INTENSIVE FORESTRY
(In board feet annually per acre)

Western white pine	200 to 470
Lodgepole pine	30 to 150
Western yellow pine	75 to 250
Englemann spruce	30 to 180
Douglas fir	500 to 1000
Sugar pine	320 to 900

Water Applications Mark Activity

(Continued from page 104)

the storage dam to supply 140,000 acre feet additional storage.

The City of Seattle has authorized the construction of a new unit on its Skagit River project. The City of Tacoma has plans practically completed for its storage reservoir on the South Fork of the Skokomish and it is anticipated that construction will begin in the spring of 1928.

The Grays Harbor Power & Light Co. is planning development of about 10,000 k.w. on the North River for service of the Willapa Bay and Grays Harbor districts. Elaborate engineering investigations on the Cowlitz River have been carried on during the year and field work is completed. Final reports have not been filed, but it is understood that they will indicate the feasibility of the project with about 100,000 continuous h.p. and an installed capacity of perhaps 150,000 h.p.

Industrial Developments: The cities of Tacoma, Aberdeen, Port Townsend and Hoquiam have all made definite progress, looking toward an ample supply of water for industrial use. Port Townsend and Aberdeen have already let construction contracts. Numerous other filings have been made for industrial use, many of these being based upon contemplated construction of pulp and paper plants.

Summary: The accompanying table shows only the larger applications filed during the year for industrial and power developments and do not include permits issued on applications filed in previous years. The applications in this table, fifty-eight in number, call for the appropriation of 37,132 cubic feet of water per second with supplemental storage supply of 536,600 acre feet. They would involve the development of not less than 478,000 h. p. of hydro-electric energy and a gross expenditure for power and industrial water supply of more than $62,000,000.

Not all of these projects will be carried to completion in the near future, if at all. For example, the two projects of Hugh L. Cooper and the Pend Oreille Lead & Zinc Co. are in conflict, and it is not at all likely that both can be developed. It is believed, however, that approximately two-thirds of the developments covered by the applications listed will take place within the next decade and the major portion of them within the next three to five years.

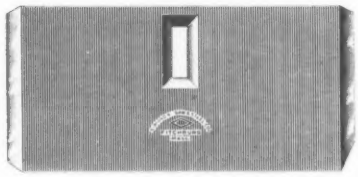
Water Applications Filed in Oregon

Filings which have been made in Oregon since January, 1926, for the use of water in connection with pulp and paper enterprises are as follows:

Applications No. 11392 and R-11393 were filed by Russell J. Hubbard of Reedsport, Ore., on March 30, 1927. No. R-11393 is for a permit to store 450-acre feet of water in Clear Lake and Edna Lake Reservoirs and No. 11392 is for the use of 20 second feet of such stored water and water from Clear Lake, Edna Lake and Eel Lake watersheds. The water is to be used for saw mill, pulp and paper mill and logging operations.

Permit No. 8106 was issued to the Spaulding Pulp & Paper Co., at Newberg, Ore., granting a right to use eight second feet from the Willamette River for pulp and paper manufacturing and fire protection. This permit has a priority of July 30, 1927.

CHIPPER KNIVES



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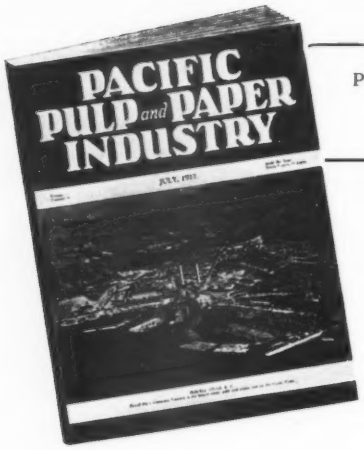

PUBLISHED MONTHLY on the PACIFIC COAST for PRODUCERS, CONVERTERS and DISTRIBUTORS of PULP, PAPER and BOARD—By the YEAR, U. S. and CANADA, $4; FOREIGN, $5.

71 COLUMBIA STREET
SEATTLE, U.S.A.

January 31, 1928.

To Every Man
Interested in
The Pacific Coast

Dear Sir:

You have shown your interest in the Pacific Coast by reading this REVIEW NUMBER. This number, as you know, is only one of the regular issues of PACIFIC PULP & PAPER INDUSTRY. It is included with twelve regular monthly numbers in one full year's subscription.

Whether you live on the Pacific Coast or elsewhere you will find PACIFIC PULP & PAPER INDUSTRY an authentic medium for keeping in touch with Pacific Coast activities in all phases of the pulp and paper industry. It is a journal published on the Pacific Coast, backed by more than thirty years of publishing experience.

You can have monthly contact with the Pacific Coast by entering your regular subscription for PACIFIC PULP & PAPER INDUSTRY. Such contact will give you first-hand information on actual and potential developments, activities of personnel, changing market trends, engineering and construction practices employed in West Coast building.

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Sulphite Progress on the Coast

(Continued from page 106)

quiring a lesser bleach consumption, the finished product is cleaner and more uniform.

The future trend of sulphite on the West Coast is toward the higher grades such as Rayon Silk Pulp and Alpha Cellulose. Prevailing high freight rates from the Pacific Coast to pulp consuming markets promote the tendency toward manufacture of the higher pulp grades. In this respect Red Fir will doubtless be used with the sulphite process in the production of Alpha Cellulose. The writer and Mr. C. F. Beyerl, with whom he was associated at the Oregon Pulp and Paper Co., Salem, Ore., made tests of Red Fir at that mill. The tests showed a very high Alpha Cellulose content.

Some Further Problems

Some problems in the sulphite industry have still to be worked out successfully on the Pacific Coast. Among these are the dirt problem in all its phases from the wood room to the finished product. Perfecting machinery for handling sawmill refuse in sulphite manufacture remains a problem for the inventive mind. In this regard it should be remembered that sawmill waste of the Pacific Coast, where big trees are the rule, is a different thing from what is recognized as mill waste today in those states that once were timber regions.

Handling and disposal of waste liquor from blow pits present another problem. This liquor may be used as a core binder in foundries, as an adhesive to bind laminated building boards, as sizing for certain kinds of paper stock, as fuel, as a binder for sawdust and low grade coal briquets, and as tanning extract.

Sulphite By-Products

Experiments carried out at one of the mills in the East with which the writer was connected showed that sulphite liquor could be evaporated down to a density of 30 degrees Be and sold at a profit for 10 to 12 cents a gallon. It was marketed to a number of foundries that used it instead of glue and molasses which cost much more than the sulphite pitch. Further, it was found to contain about 1 per cent by volume of 95 per cent grain alcohol. In other words, it is possible to produce from 12 to 18 gallons of 95 per cent grain alcohol from each ton of sulphite at a cost of 25 to 30 cents a gallon. The alcohol may be recovered while the liquor is being concentrated for use as fuel or for foundry use.

Wood suitable for manufacturing sulphite pulp should not be used in making kraft or other low grade papers. While this point may not be of great significance today, it is certain that the problem of obtaining material for the high grade papers will be one of increasing interest.

Finally, a word about investments. Publications and promoters of legitimate enterprises who have the interest of sound development of the pulp and paper industry on the Pacific Coast at heart should aim to provide the investor with facts instead of propaganda. The investor needs pulp mill education. The pulp industry is destined to make the Pacific Coast a veritable beehive of activity, but, more than that, it will serve as a stabilizer for the lumber industry and put a stop for all time to an appalling and sinful timber waste. Development can be aided by the intelligent interest of the investing public. If prospective investors in a new project would have their bankers make a thorough investigation to determine the reliability and experience of the management as well as the character of the promoters few illegitimate enterprises would survive, and the industry would be better off in every respect.

Some Important Pacific Paper Dates

1861—First mills in operation in California. Among the early mill owners were S. P. Taylor of Taylorville, in Marin County; Rufus B. Lane of Stockton, and Henry Pierce of San Francisco.

1863—The mill at Stockton was experimenting with making paper from cat-tails but found the process untidy and the product impractical. Experiments were being made in all parts of the world with various fibres in an effort to find a substitute for rags.

1873—John Lewthwaite began work at Stockton which was still making cat-tail fibre paper, but soon adopted the rag formula of the time.

1878—California Paper Co. incorporated July 1.

1884—Falls Pulp Co. incorporated in Oregon and bought Young's River Pulp Mill from R. M. Brayne.

1888—Willamette Pulp & Paper Co. organized for the purpose of manufacturing groundwood. What is now known as Mill "A" of the Crown Willamette plant was erected at Oregon City and began operations the next year.

1889—Crown Paper Co. organized.

1890—Mill "C" of present Crown Willamette plant built by Willamette Co.

1891—Puget Sound Pulp & Paper Co. began construction at Everett, Wash.

1891—Willamette made first sulphite fibre on Coast.

1892—California Paper Co. at Stockton made first all-wood paper.

1895—Puget Sound Pulp & Paper Co. became the Everett Pulp & Paper Co.

1896—Consolidation of the Crown and Columbia companies as Crown-Columbia Pulp & Paper Co.

1903—Crown-Columbia bought the machine from the old Stockton mill in California and moved it to Oregon City. James Brown of Antioch bought the other Stockton machinery.

1905—Crown-Columbia and Willamette companies consolidated.

1908—W. P. Hawley, Sr., established the Hawley Pulp & Paper Co. at Oregon City.

1912—Inland Empire Paper Co. established near Spokane, Wash.

1918—Oregon Pulp & Paper Co. established.

1919—Cascade Paper Co. began production at West Tacoma.

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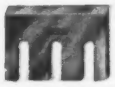
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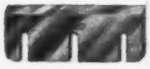
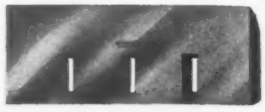
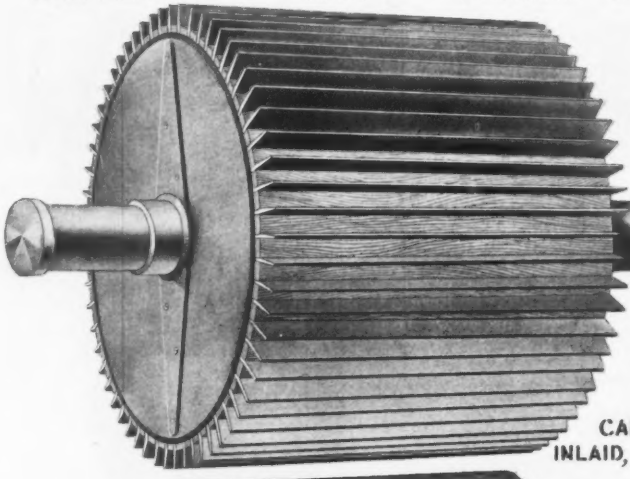
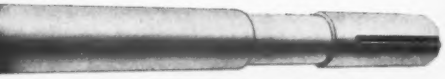

BARKER

GREEN BAY BARKER


CHIPPER



BEATER ROLL WOODS, OAK OR MAPLE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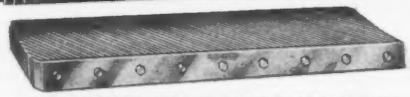
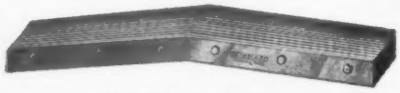
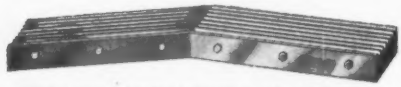
CARBON & ALLOY HEAT TREATED STEEL LAID, INLAID, TINNED & BRONZE BEATER ROLL FLY BARS

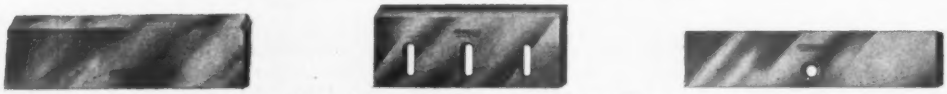

FIBRE DRAWING DIAGONAL PLATE


ELBOW PLATE

SHARP CUTTING PLATE


RAPID REDUCTION PLATE

PRESS OR FLAT BED CUTTER KNIFE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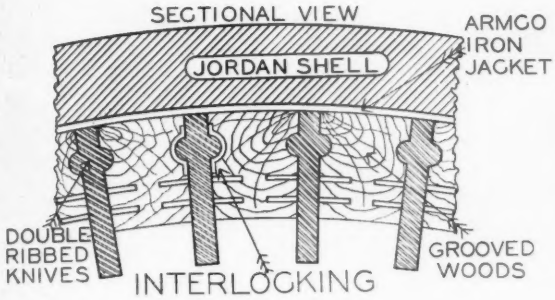
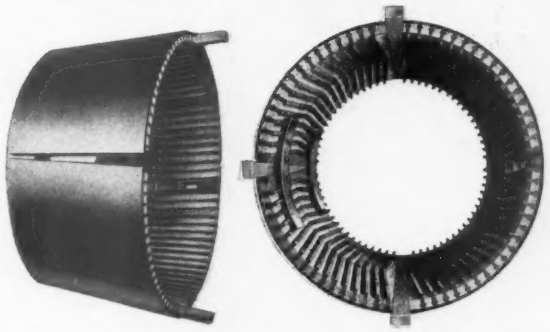
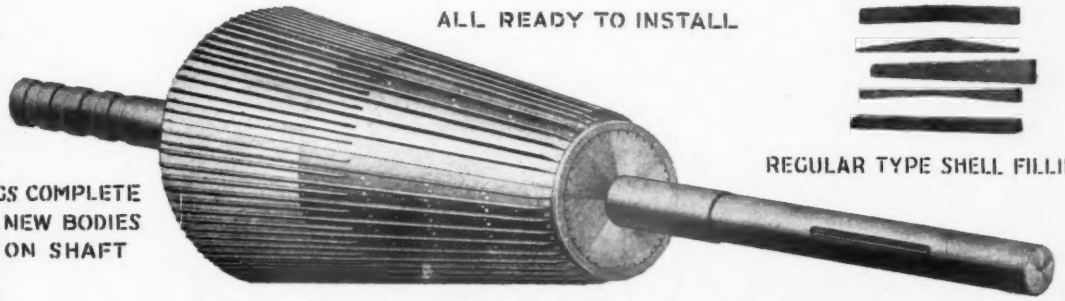




EAGLE TYPE INTERLOCKING KNIVES AND WOODS

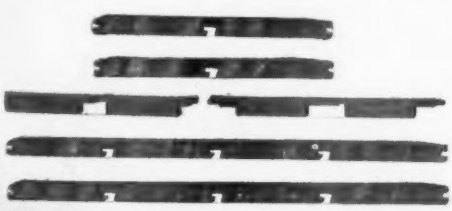
ALL READY TO INSTALL



PLUGS COMPLETE AND NEW BODIES PUT ON SHAFT

NEW PLUG WITH TRUSS PLATES

REGULAR TYPE SHELL FILLINGS



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HEAT TREATED " "
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" " TINNED "

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The Publisher's Page

THANK you, readers of PACIFIC PULP & PAPER INDUSTRY, thank you. It has been an interesting task to teach a young journal to walk by itself, to see it develop from swaddling clothes to genuine recognition in one short year. We say the task has been interesting, but it would have been impossible had it not been for the hearty support of our subscribers in all parts of the land.

We believed when we launched this journal that the pulp and paper making industry on the Pacific Coast had reached a stage of development that entitled it to a publication of its own. The encouraging response we have received has borne out that belief. We have tried sincerely to give men of the industry on the Pacific Coast a publication packed with information about their own territory, a journal that they can feel is a part of their own business, born and reared in the West. To those men in the industry whose daily duties lie in parts other than the Pacific Coast we have tried to give a real contact with the Western field, a medium through which they can watch the development of a section that is so rapidly becoming an important factor in the world's pulp and paper supply.

The many fine comments which PACIFIC PULP & PAPER INDUSTRY has received are highly appreciated. These have come from mill men, distributors, and others in one way or another identified with the paper industry. A representative group of comments is set out below:

At St. Helens, Ore., Max Oberdorfer has made a fine record for the first year of operation of the St. Helens Pulp & Paper Co. A general manager has a lot to do in a paper mill, but Mr. Oberdorfer wanted us to know that—

"I wait for Pacific Pulp & Paper Industry each month and find it just about the most interesting trade journal I know."

We also want to thank Mr. Charles K. Spaulding, president of the Spaulding Pulp & Paper Co., which began production of sulphite pulp at Newberg, Oregon, in 1927, for saying in respect to Pacific Pulp & Paper Industry that it was an editorial job well done.

From Puget Sound's only wrapping paper mill, the Tumwater Paper Mills Co., Secretary-Treasurer R. L. Shepherd writes to say that Pacific Pulp & Paper Industry—

"* * * is a credit to the pulp and paper industry of the Pacific Northwest and should receive the most hearty support of the Coast manufacturers."

Here is one from Mr. I. Zellerbach, president of the Zellerbach Paper Co., San Francisco. Mr. Zellerbach writes about our September, 1927, issue:

"I want to compliment you on the last issue of 'Pacific Pulp & Paper Industry'. For the short time that you have issued this magazine, it seems to me to represent the paper trade even more than magazines that have been issued for a great many years. It is a credit to you and a credit to the industry."

Mr. W. D. McDonald, district manager of the Westinghouse Electric Manufacturing Co., with offices in Seattle, writes:

"* * * and wish to congratulate you upon the successful manner in which you have produced this publication. If you continue the policy which you are now following, I believe this publication will rank high among those having to do with the Pulp and Paper Industry. Please accept my congratulations for the success you are having."

And from a man who travels much among the mills of the world, W. H. Donaldson of the Perkins-Goodwin Co., New York, we have this nice bouquet:

"We all look forward to receiving your very worthy magazine each and every month, and we feel it has become part of our organization. The writer believes, considering the short space of time in which you have been publishing this journal, you should be complimented on giving the paper and pulp industry such complete information as does appear in each and every issue."

The paper merchants have a kind word also. We like this one from Mr. C. H. Beckwith, Northwest manager for Carter, Rice & Co., Seattle.

"May we offer a word in commendation of your publication? We are constantly hearing favorable remarks about 'Pacific Pulp & Paper Industry' and the very thorough and interesting manner in which it conveys news and information of the trade. The high standard which was evident in the first issue has been maintained through all the succeeding numbers, and the publication has undoubtedly come to fill a very distinct need in this young, but none the less important, industry of the Pacific slope. Best wishes for this New Year and long continued success."

And from the far-off Philippine Islands comes this one from the J. P. Heilbronn Co., paper merchants in Manila:

"Please enter our subscription for your paper. We have a great deal of faith in the paper industry on the Pacific Coast as we secure a large portion of our stock from the numerous mills of that section."

Walter S. Hodges of Portland, Pacific Coast representative of Appleton felts and wires, who was formerly purchasing agent for the Crown Willamette Paper Co., and who knows 'most everybody on the Pacific slope, has these kind words:

"I think it only fair and friendly to tell you that while on the writer's travels among the Coast mills, including British Columbia, he hears many favorable comments on your magazine, first among them being the thought that you seem to get most of the Coast news while it is yet news and of interest * * * your magazine fills a distinct place of its own, and I think you are to be complimented highly on the excellent showing you have made during the few months you have been under way."

President E. L. Oliver of the Oliver Continuous Filter Co., remarks:

"We extend to you our compliments on the splendid manner in which your magazine has developed. We have been greatly interested in the growth of your journal and find much valuable information in the many well written articles."

From the General Superintendent's office of the Hammermill Paper Co., at Erie, Pa., Mr. H. P. Obermanns writes that he was exceedingly interested in seeing, during his recent visit to the Pacific Coast, what was being done. He reads Pacific Pulp & Paper Industry every month "with a great deal of interest."

The people out in the branch offices like to know what is going on also. President R. A. McDonald of the Western Waxed Paper Co., instructs us from his Oakland office to put the North Portland and Los Angeles branches on the subscription list also.

D. C. Everest, secretary and general manager of the Marathon Paper Mills Co., of Rothschild, Wis., and, because of his active participation in promoting the good of the industry through association affairs, one of the best known men in paper making today, receives our appreciative thanks for writing to us:

"You have done a very good job in producing an interesting and attractive trade journal."

Everybody knows M. R. Higgins, Chairman of the Board of the Zellerbach Corporation, President of the

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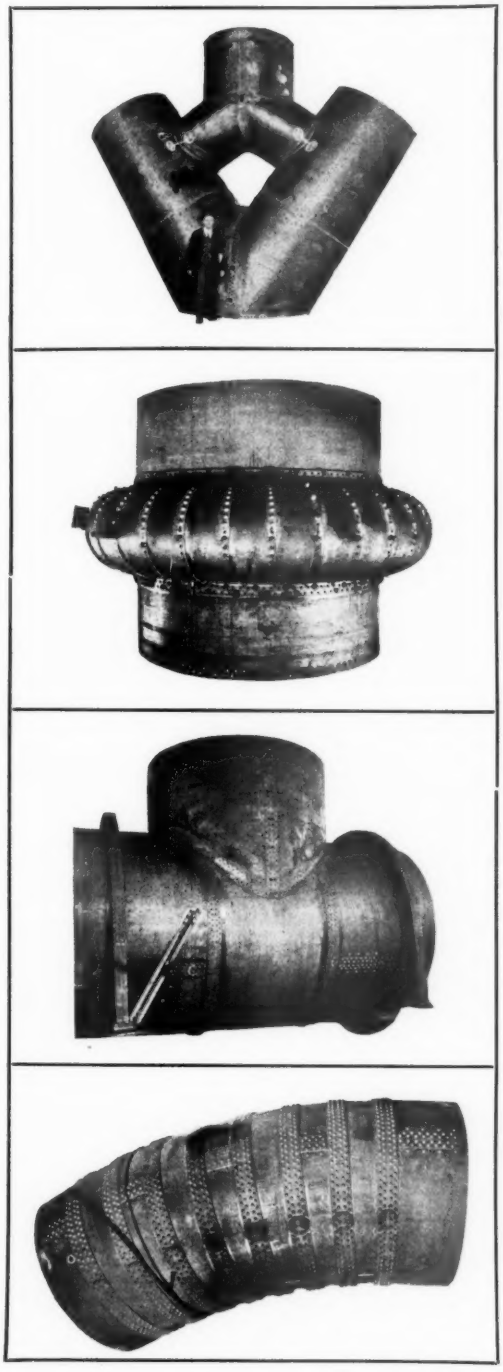
J. H. Fox *Established 1887* **Will H. Jenkins**



40 YEARS of service to the varying needs of the Pacific Northwest — from 1887 to 1927—places the COMMERCIAL BOILER WORKS in an experienced position to serve the

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Manufacturers of Marine and Stationary, Fire and Water Tube Boilers, Digesters, Diffusers, Tanks, Etc.

-:-

The pictures on this page show the variety of work that is being handled by the

COMMERCIAL BOILER WORKS

53 to 81 West Lander St.
on East Waterway

SEATTLE, WASH.

MA in 9127

When writing to COMMERCIAL BOILER WORKS *please mention* PACIFIC PULP & PAPER INDUSTRY

Pacific States Paper Trade Association, and the "grand old man" of the paper industry on the Pacific Coast, as he is so often called.

"The fine type of magazine you are publishing reminds me that when you first informed me of your intention I thought you were visionary. The result is a serious reflection on my knowledge of paper trade journalism.

"The amount of advertising and news that you print is astounding, especially in such a short existence. They speak volumes for your business vision and news instinct. I commend your foresight in conceiving the idea and your energy and enterprise in achieving success so quickly. You are an example of Western dash and dare combined with business acumen."

F. Enders, manager of the pulp department of Bulkley, Dunton & Co., writes from his New York office:

"We wish to congratulate you upon the rapid growth of your publication, and find it most complete with facts pertaining to developments on the Pacific Coast."

From one of the old established equipment companies, The Sandy Hill Iron & Brass Works, President A. J. Kennedy writes from Hudson Falls, N. Y.:

"The writer had the pleasure of meeting your representative at Richmond during the convention of the Paper Mill Superintendents. We will be pleased to see him again when he calls at our plant. We also wish to compliment you on your publication."

President A. W. Towne wants all the branches of Blake, Moffitt & Towne scattered the length and breadth of the Pacific Coast, to get our journal regularly. He accomplished that by entering a blanket subscription.

President C. R. McMillen of the Union Bag & Paper Power Corp. forgot about his cares in building the new $2,500,000 kraft mill at Tacoma long enough to say:

"You are putting out a mighty fine journal. It's a dandy. I read it with a great deal of interest."

1927 Pulp and Paper Production

The table shown below represents the total production of pulp and paper for the first eleven months of 1927 of those mills reporting to the American Paper & Pulp Association. These figures are compiled monthly by the association. The item in the last column under both the "pulp review" and the "paper review" represents the stocks of the different items on hand at the end of November. The figures in the other columns under "production", "used" and "shipments" are cumulative for the period January 1 to November 30.

WOOD PULP REVIEW FOR ELEVEN MONTHS IN 1927

Grade	No. of Mills	Production	Used	On Hand end Shipped	of Month
Groundwood Pulp	91	942,110	952,139	28,619	91,756
Sulphite, News Gr.	38	444,658	414,062	29,959	9,450
Sulphite, Bleached	23	271,789	232,410	40,416	2,587
Sulphite, Easy Bl.	7	44,651	37,857	5,868	1,844
Sulphite, Mitsch.	6	74,413	64,410	10,391	408
Sulphate Pulp	10	183,480	166,801	15,987	2,918
Soda Pulp	11	182,958	133,795	49,507	2,378
Pulp, other grades	2	479	186	143	162
Total—All Grades		2,144,538	2,001,660	180,890	111,503

PAPER REVIEW FOR ELEVEN MONTHS IN 1927

Grade	No. of Mills	Production Net Tons	Shipments Net Tons	Stocks on hand end of month Net Tons
Newsprint	71	1,367,595	1,352,073	28,543
Book (M.F.S.C. & Coated)	63	1,009,678	1,000,834	54,794
Paperboard (Straw, Fibre, Leather, Chip, Box, etc.)	113	2,129,535	2,133,649	40,735
Wrapping (Kraft, Manila, Fibre, etc.)	74	567,385	553,999	47,351
Bag (all kinds)	23	139,328	139,501	8,885
Fine (Writing, Bond, Ledgers, etc.)	74	328,542	330,110	40,138
Tissue (Toilet, Crepe, Fruit Wrappers, etc.)	53	159,318	157,857	14,799
Hanging (No. 2 Blank, Oatmeal, Tile, etc.)	9	62,954	62,323	3,588
Felts and Building (Roofing, Sheathing, etc.)	13	112,508	111,961	2,858
Other grades (specialties not otherwise classified)	60	243,423	242,791	17,706
Total—All grades		6,120,266	6,085,098	259,397

To Our Friends Across the Continent

It is with pleasure that we announce
the appointment of

WOODBURY & WHEELER CO.
55 Second Street
PORTLAND, OREGON

As our Exclusive Distributors for PORTLAND, OREGON and adjacent territories.

This fine house will carry a complete line of our mechanical rubber goods, and await the opportunity of serving you through their able representative—

MR. GEORGE A. FROGNER

The Manhattan Rubber Mfg. Co.
PASSAIC, NEW JERSEY

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